



# **Principles of Behavior Modification**

**Albert Bandura**

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**Albert Bandura**

to Ginny, Mary, and Carol

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## Preface

This book presents basic psychological principles governing human behavior within the conceptual framework of social learning. Over the years an impressive body of knowledge about the mechanisms through which behavior is acquired and modified has been accumulated. But despite this vigorous growth of research on human behavior, a number of psychological processes that are highly influential in human functioning have been overlooked or only partially investigated. This volume reviews the recent theoretical and experimental advances in the field of social learning. It gives special emphasis to the important roles played by vicarious, symbolic, and self-regulatory processes, which receive relatively little notice even in most contemporary theories of

behavior.

The worth of a psychological theory must be judged not only by how well it explains laboratory findings but also by the efficacy of the behavioral modification procedures that it produces. Recent years have witnessed widespread applications of methods derived from principles of social learning to the modification of important social phenomena in familial, educational, clinical, and other social settings. By requiring clear specification of treatment conditions and objective assessment of outcomes, the social-learning approach presented in this book contains a self-corrective feature that distinguishes it from change enterprises in which interventions remain ill-defined and their psychological effects are seldom objectively evaluated.

New social change procedures are by tradition

enthusiastically promoted, and it is not until after the methods have been applied for some time by a coterie of enthusiasts that systematic tests of efficacy are conducted. Usually the methods are then unceremoniously retired by subsequent controlled studies. Professional workers in this field have, therefore, come to view any new approach as a passing fad. However, when laboratory tests of efficacy precede social applications, new methods are subjected to close scrutiny at each stage of development, and those that evolve are likely to produce outcomes sufficiently favorable to weather rigorous evaluation. The successful results obtained by social-learning procedures in carefully controlled studies justify optimistic expectations for future developments of this approach. The numerous investigations reported in this book also illustrate how understanding of major change processes can



be advanced by inventive research on socially significant problems. Contrary to much of the current criticism, basic research need not settle for inconsequential dependent measures.

This book is concerned not only with the validity of the principles set forth but also with the conditions under which they can serve as an instrument for human advancement. The value issues that arise in the applications of social-learning procedures to achieve various psychological changes are, therefore, closely examined, and special attention is given to the effects of social practices on man's self-evaluation and self-enhancement.

While this book was being written the author contributed chapters on modeling processes to Volume II of *Advances in Experimental Social Psychology* (Bandura, 1965) and to the *Ciba*

*Foundation Symposium: The Role of Learning and Psychotherapy* (Bandura, 1968). Chapter 3 contains a revised and updated version of some of the material that originally appeared in the latter publications.

Many people contributed in one way or another to this venture. To Ted Rosenthal and Rogers Elliott, who read preliminary versions of the manuscript and made many valuable suggestions, I offer my sincere thanks. I am also indebted to countless students and colleagues who have helped through collaborative research and sharing of ideas to enhance the value of what I have written. I owe a special personal debt to my former student and colleague, Richard Walters, who died tragically at the height of his productive career. Although he never read what I have written here, our lively discussions during collaborative projects did much to clarify some of

the theoretical issues discussed in this book.

The preparation of this volume involved considerable work, and I wish to express my gratitude to the people who helped lighten my labors. I am especially grateful to Jane Crane for deciphering illegible draft versions and for many hours of painstaking effort in preparing the manuscript for publication. Thanks are due to Robert O'Connor for his assistance with drafting and photographic matters. I should also like to pay tribute to Darlene Lapham for her remarkably efficient typing of the manuscript.

Finally, the dedication of this volume signifies my profound indebtedness to my family, who sacrificed many weekend activities and vacations while I was absorbed in the task of writing this book.

Albert Bandura

*Stanford, California April 1969*

## Causal Processes

The development of principles and procedures of behavioral change is largely determined by the model of causality to which one subscribes. The methods used to modify psychological phenomena therefore cannot be fully understood independently of the personality theory upon which they are based. The major differences between rival theoretical orientations are most strikingly revealed in their interpretations of grossly deviant behavior. Consequently the systems that have been advanced to explain these perplexing conditions will be considered in some detail here, although this book is only partially concerned with issues relating to deviant

behavior.

The earliest conceptions of psychopathology viewed behavioral anomalies as external manifestations of evil spirits that entered the victim's body and adversely affected his behavior. Treatment accordingly was directed toward exorcising demons by various methods, such as cutting a hole in the victim's skull, performing various magical and religious rituals, or brutally assaulting—physically and socially—the bearer of the pernicious spirits. Hippocrates was influential in supplanting the demonological conceptions of deviant behavior by relabeling it disease rather than demonic manifestations. Wholesome diets, hydrotherapy, bloodletting, and other forms of physical intervention, some benign, others less humane, were increasingly employed as corrective treatments.

Although psychological methods gradually replaced physical procedures in modifying deviant response patterns, the analogy of physical health and disease nevertheless continued to dominate theories of psychopathology. In this conceptualization, behavioral patterns that depart widely from accepted social and ethical norms are considered to be derivatives or symptoms of an underlying disease. Modification of social deviance thus became a medical specialty, with the result that persons exhibiting atypical behavior are labeled “patients” suffering from a “mental illness,” and they generally are treated in medically oriented facilities. The disease concepts are likewise indiscriminately applied even to social phenomena, as evidenced by the frequent designation of cultural response patterns as “healthy” or “sick.” Had Hippocrates represented behavioral anomalies as products of idiosyncratic

social-learning experiences rather than as expressions of a somatic illness, the conceptualization and treatment of divergent response patterns might have taken an entirely different course.

A quasi-disease model is still widely employed in explanations of grossly deviant behavior, but the underlying pathology is generally considered to be psychic rather than neurophysiological in nature. This conceptual scheme became further confused when the appropriateness of the disease analogy to social behavior was increasingly challenged (Szasz, 1961). Most personality theorists eventually discarded the notion that deviant behavior is a manifestation of an underlying mental disease, but they nevertheless unhesitatingly label anomalous behaviors as symptoms and caution against the dangers of symptom substitution. In these theories, the



conditions supposedly controlling behavior continue to function analogously to toxic substances in producing deviant responses; however, the disturbing agents comprise a host of inimical psychodynamic forces (for example, repressed impulses, energized traits, psychic complexes, latent tendencies, self-dynamisms, and other types of energy systems) somewhat akin to the pernicious spirits of ancient times. Many contemporary theories of psychopathology thus employ a quasi-medical model fashioned from an amalgam of the disease and demonology conceptions, which have in common the belief that deviant behavior is a function of inimical inner forces. Consequently, attention is generally focused, not on the problem behavior itself, but on the presumably influential internal agents that must be exorcised by “catharsis,” “abreaction,” and acquisition of insight through an extended

interpretive process. Indeed, direct modification of so-called symptomatic behavior is considered not only ineffective but actually dangerous, because, it is held, removal of the symptom has no effect upon the underlying disorder, which will manifest itself again in a new, possibly more debilitating symptom.

#### *SOCIAL LABELING OF DEVIANT BEHAVIOR*

Although most psychotherapists agree that direct “symptom” removal is inadvisable and few of them would acknowledge engaging in such forms of treatment, remarkably little attention has been devoted to the definition of what constitutes a “symptom.” Categorizing a pattern of behavior as symptomatic of an underlying disorder actually involves a complex set of criteria, most of which are quite arbitrary and subjective. Whether specific actions are called normal or symptomatic

expressions will depend upon whether certain social judges or the person himself disapproves of the behavior being exhibited. Since symptom labeling primarily reflects the evaluative responses that a given behavior evokes from others, rather than distinguishable qualities of the behavior itself, an identical response pattern may be viewed as a pathological derivative or as wholesome behavior by persons whose judgmental orientations differ. Aggressiveness in children, for example, may be positively reinforced and regarded as a sign of masculinity and healthy social development by some parents, while the same behavior is generally viewed by educational, legal, and other societal agents as a symptom of a personality disorder (Bandura, 1960; Bandura & Walters, 1959).

The designation of behavior as pathological thus involves social judgments that are influenced

by, among other factors, the normative standards of persons making the judgments, the social context in which the behavior is exhibited, certain attributes of the behavior, and numerous characteristics of the deviator himself. An adequate theory of deviant behavior must therefore be concerned with the factors determining evaluative judgments. Unfortunately, in spite of widespread use of diagnostic classifications and the potentially serious consequences of labeling persons as mentally disturbed, there has been surprisingly little systematic study of the factors governing such judgmental behavior.

Psychopathology is characteristically inferred from the degree of deviance from the social norms that define how persons are expected to behave at different times and places. Consequently, the *appropriateness* of symbolic, affective, or social

responses to given situations constitutes one major criterion in labeling “symptomatic” behavior. Departures from normative standards that do not inconvenience or interfere with the wellbeing of others are usually tolerated; deviations that produce rewarding consequences for the members of a society, as in the case of technological inventions and intellectual and artistic innovations, may be actively promoted and generously rewarded. On the other hand, deviance that generates aversive consequences for others elicits strong societal disapproval, is promptly labeled abnormal, and generally is met by coercive pressures to eliminate it.

The appropriateness criterion poses serious problems in societies, such as our own, that are differentiated into many subcultures whose members subscribe to divergent behavioral norms and therefore do not agree on what is suitable

social behavior. Members of social groups who want rewards that are highly valued in the culture but lack the means of obtaining them in legitimate ways (Cloward & Ohlin, 1960; Merton, 1957) are often forced to resort to socially unacceptable activities. In these instances, antisocial patterns are not only normatively sanctioned, but the social environment provides these persons ample opportunities, through appropriate reinforcement contingencies and role models, to develop and to perfect deviant modes of behavior. According to the prevailing normative structure of these subcultures, skillfully executed antisocial behavior represents emulative rather than sick behavior and is governed by the same types of variables that control the prosocial response patterns displayed by members of the larger society.

Other subgroups are classified as social deviants, and therefore “sick” or “crazy,” not

because they adhere to culturally disapproved means of gaining highly rated objectives but because they withdraw from the dominant social system and reject the basic cultural goals themselves. The conforming majority within a society may label nonconformist groups, such as “Bohemians,” “beatniks,” and “hippies,” that refuse to strive for the goals highly valued in the culture as exhibiting maladaptive behavior. From the perspective of the deviants, the life style of conforming members is a symptomatic manifestation of an overcommercialized, “sick” society. Thus the same pattern of behavior may be deemed a symptom by one social group but judged healthy and positively reinforced by persons who adhere to a different code of behavior. Similarly, when a society radically alters its social and legal norms, either the presence or absence of the same responses may be judged inappropriate, and,

consequently, labeled symptoms of an underlying pathology. Thus, a citizen socialized in other respects who commits a brutal homicide will be diagnosed as suffering from a serious mental disorder, but a military recruit's inability to behave homicidally on the battlefield will likewise be viewed as symptomatic of a "war neurosis." The latter example further illustrates how behavior can come to be thought of as symptomatic because of changes in societal norms rather than because of a psychopathology reflected in the behavior itself.

The discussion thus far has been concerned with the deviant behavior of members of groups, who mutually support and reinforce each other's ideologies and actions. Some individuals display gross behavioral eccentricities that appear totally inexplicable; persons from different subgroups who do not share the same normative systems are



apt to view these eccentricities as pathological manifestations. Even in these instances, when the idiosyncratic social-learning history for the behavior is known there is no need to assume an underlying disease process. Lidz, Cornelison, Terry, & Fleck (1958) report a case, for example, in which sibling schizophrenics believed, among other strange things, that “disagreement” meant constipation. This clearly inappropriate conceptual behavior was the result of exposure to bizarre social-learning contingencies and not an expression of a mental illness. Whenever the sons disagreed with their mother, she informed them that they were constipated and required an enema. The boys were then disrobed and given anal enemas, a procedure that dramatically conditioned an unusual meaning to the word “disagreement.” The cases cited by Lidz and his associates (Lidz, Fleck, & Cornelison, 1965)

provide compelling evidence of development of delusions, suspiciousness, grandiosity, extreme denial of reality, and other forms of “schizophrenic” behavior through direct reinforcement, and of their social transmission by parental modeling of incredibly deviant behavior patterns.

In addition to the influence of normative commitments in determining judgmental responses, certain properties of behavior readily invite one to label an emotional disorder symptomatic. Responses of high magnitude, for instance, often produce unpleasant experiences for others; they are therefore more likely to be considered pathological manifestations than are responses of low or moderate intensities. A youngster who is continually wrestling other children will generally be viewed as exhibiting youthful exuberance; in contrast, a child whose

physically aggressive behavior is more forceful and hurtful will in all likelihood be regarded as emotionally disturbed. Although pervasive and intense emotional responses may be reliably categorized, disagreements are apt to arise in the labeling of behavior that falls at less extreme points on the response-intensity continuum. The line separating normality and abnormality may be variously located depending upon the tolerance limits for aversiveness of different judges. Even if a high degree of consensus could be achieved in designating the acceptable limits of amplitude for various behaviors, no evidence exists that emotional responses of high intensity are mediated by psychopathological internal processes, whereas similar responses of lesser strength are governed by nonpathological internal processes.

*Behavioral deficits* are also frequently

interpreted as symptoms of emotional disorder, particularly when the deficits produce hardships and aversiveness for others. Adequately endowed children, for example, who are incontinent and who exhibit marked deficiencies in interpersonal, verbal, and academic skills, and adults who are unable to meet social, marital, and vocational task requirements tend to be labeled as emotionally disturbed. It is generally assumed, moreover, that the greater the deficits, the more extensive the underlying psychopathology. The arbitrary and relativistic nature of the deficit or competence criterion would become readily apparent if one were to vary the minimum standards of competence required in any given situation. If the standards were set at a comparatively low level, practically all members of a society would be judged competent and healthy, whereas the vast majority would suddenly acquire a

psychopathology if exceedingly high standards were adopted. In the latter case, therapists and diagnosticians might devote much time to locating the source of pathology within the individuals.

The *intention* attributed to an action will affect its categorization by others as a symptomatic expression. When the variables governing physical and biological phenomena remained unknown, a host of internal forces and deities were invoked as causal agents. As scientific knowledge increased, these fanciful driving forces were replaced by explanatory concepts involving manipulable variables. Similarly, interpretations of psychological phenomena often assume pathological inner agents in cases where deviance appears unintelligible. If a person engages in disapproved behavior to attain generally valued material objects, his activities—being readily understandable—are less likely to be regarded as

manifestations of emotional disease than if his deviant behavior has no apparent utilitarian value. Delinquents who strike victims on the head to extract their wallets expediently are generally labeled semiprofessional thieves exhibiting income-producing instrumental aggression. By contrast, delinquents who simply beat up strangers but show no interest in their victims' material possessions are supposedly displaying emotional aggression of a peculiarly disturbed sort. It is evident that in many cases of so-called nonutilitarian aggression, the behavior is highly instrumental in gaining the approval and admiration of peers and in enhancing status in the social hierarchy of the reference group. Peer-group approval is often more powerful than tangible rewards as an incentive for, and reinforcer of, aggressively deviant behavior (Buehler, Patterson, and Furniss, 1966).

The influential role of social reinforcement in regulating dangerous, senseless behavior is clearly revealed in a field study by Yablonsky (1962), who found that the dominant reinforcement contingencies in many delinquent gangs have shifted from utilitarian antisocial activities to destructive assaults executed in a “cool” and apparently indifferent manner on persons and property. The way in which aggression has taken on status-conferring value and in which threat of loss of “rep” may compel a person to engage in a homicidal assault is graphically illustrated in the following excerpt from an interview with one of the boys studied by Yablonsky.

“Momentarily I started to thinking about it inside; I have my mind made up I’m not going to be in no gang. Then I go on inside. Something comes up, then here comes all my friends coming to me. Like I said before, I’m intelligent and so forth. They be coming to me—then they talk to me about what they

gonna do. Like, 'Man, we'll go out there and kill this cat.' I say, 'Yeah.' They kept on talkin'. I said, 'Man, I just gotta go with you.' Myself, I don't want to go, but when they start talkin' about what they gonna do, I say, 'So, he isn't gonna take over my rep. I ain't gonna let him be known more than me.' And I go ahead [p. vii]."

External contingencies of reinforcement rather than internal emotional disease also appear to be the major determinants of the behavior of another youth involved in a gang killing: "If I would of got the knife, I would have stabbed him. That would have gave me more of a build-up. People would have respected me for what I've done and things like that. They would say, 'There goes a cold killer' [p. 8]." Similar reinforcement contingencies operated in the practice of a gang apprehended that used attacks upon people without provocation as its main admissions requirement. Each physical assault, which had to be observed by



a club member to be valid, was valued at 10 points; and a total of 100 points was required for full-fledged membership (San Francisco *Chronicle*, 1964).

It should be noted in passing that prosocial approval-seeking behavior like athletic achievements or musical accomplishments, which may likewise have no apparent utilitarian value, is seldom labeled as emotionally disturbed behavior. Certain subgroups simply value and reward skillful “stomping” more highly than musical virtuosity.

The instrumental versus emotional dichotomy, therefore, appears primarily to reflect differences in the types of rewards sought, and not basic differences in the purposiveness of the behavior itself, or in the nature of the mediating internal events. Since some members of a society are likely

to be brought up under atypical contingencies of social reinforcement, events which are ordinarily neutral or aversive for others may acquire a strong positive valence; consequently, the puzzling behavior exhibited by these individuals may appear to have little or no instrumental value, and thus tend to be explained by reference to internal psycho- pathological processes.

Certain behavioral requirements are prescribed according to a person's age, sex, social position, occupation, race, ethnic origin, or religion. Therefore *personal attributes* also enter into social judgment of behavior that deviates from role demands. For example, behavior considered to be normal at an early age may be regarded as a symptom of personality disturbance later, as in the case of enuresis. It is very appropriate, in this connection, to repeat Mowrer's (1950) query: "And when does

persisting behavior of this kind suddenly cease to be normal and become a symptom [p. 474]?" Or consider the attribute of sex. The differential cultural tolerance for cross-sex behavior displayed by males and females illustrates the role of sex characteristics in the assignment of symptomatic status to deviant behavioral patterns. The wearing of female apparel by males is considered to be indicative of a serious psychological disorder, requiring prompt legal and psychiatric attention. On the other hand, females may adopt masculine garb, hair styles, and a wide range of characteristically masculine response patterns without being labeled as mentally disturbed. Since masculine role behavior occupies a position of relatively high prestige and power in our society and often is more generously rewarded than feminine role behavior, the emulation of masculine tendencies by females is more

understandable and, therefore, less likely to be interpreted by reference to disease processes.

There is another side to the influence of personal attributes on judgmental responses. The social-learning background and characteristics of the person making the judgments may significantly affect his designation of particular behaviors as indicative of mental health or psychic pathology. Spohn (1960) found that therapists' social values were related to their mental health judgments of patients' behavior that reflected similar value dimensions: that is, therapists thought the patients more like themselves were the healthier ones.

Although the presence of psychic illness is frequently judged in terms of deviance from particular social norms, in many cases it is primarily based on *self-definition*. As Terwilliger &

Fiedler (1958) have shown, persons often label themselves as emotionally disturbed, whereas others may judge them to be functioning satisfactorily within the prevailing social norms. Evaluative discrepancies of this type typically arise when persons impose excessive demands upon themselves and suffer subjective distress as a result of failure to meet self-imposed standards. A comprehensive theory of deviance must take into consideration self-reactions as well as societal reactions to one's behavior.

It is apparent from the foregoing discussion that the categorization of behavior as symptomatic of an underlying pathology depends upon a host of subjective criteria, and as a consequence, the same behavior may be characterized as "healthy" or "sick" by different judges, in different social contexts, and on the basis of performers' social characteristics. It is true, of course, that questions

of value and social judgment arise also in the diagnosis of physical disorders. In such cases the symptom-disease model is quite appropriate since internal organic pathologies do in fact exist and can be verified independently of their peripheral manifestations. Brain tumors and dysfunctions involving respiratory, circulatory, or digestive organs are observable events. Where deviant behavior is concerned, analogy with the symptom-disease model is misleading because there are no infected organs or psychic disease entities that can be identified as causal agents. The psychic conditions that are assumed to underlie behavioral malfunctioning are merely abstractions from the behavior. In the disease analogy these abstractions are not only given substance and existence independent of the behavior from which they were inferred, but they are then invoked as the causes of the same behavioral referents. For

these reasons, so-called symptomatic behavior can be more adequately explained in terms of social learning and value theory than through inappropriate medical analogizing. An extended account of a social-learning taxonomy of behavioral phenomena generally subsumed under the term “psychopathology” is presented elsewhere (Bandura, 1968). The preceding discussion reviewed some of the principal factors determining the attribution of sickness to deviant behavior. Similar social judgment processes are, of course, involved in the attachment of descriptive labels such as aggression, altruism, dependency, or achievement to particular response patterns.

#### *HYPOTHETICAL INTERNAL DETERMINANTS OF BEHAVIOR*

The questions raised concerning the utility and validity of the concept of “symptom” apply equally to the psychopathology presumed to underlie the

troublesome behavior. From the focusing of attention on inner agents and forces, many fanciful theories of deviant behavior have emerged. The developmental history of social behavior is rarely known, and its reconstruction from interview material elicited by therapists or diagnosticians is of doubtful validity. In fact, the content of reconstruction is highly influenced by the interviewer's suggestive probing and selective reinforcement of content that is in accord with his theoretical orientation. Heine (1953), for example, found that clients who were treated by client-centered, Adlerian, and psychoanalytic therapists tended to account for changes in their behavior in terms of the explanations favored by their respective interviewers. Even a casual survey of interview protocols would reveal that psychotherapists of different theoretical affiliations tend to find evidence for their own



preferred psychodynamic agents rather than those cited by other schools. Thus, Freudians are likely to unearth Oedipus complexes and castration anxieties, Adlerians discover inferiority feelings and compensatory power strivings, Rogerians find compelling evidence for inappropriate self-concepts, and existentialists are likely to diagnose existential crises and anxieties. It is equally true that Skinnerians, predictably, will discern defective conditions of reinforcement as important determinants of deviant behavior. In the latter explanatory scheme, however, the suspected controlling conditions are amenable to systematic variation; consequently the functional relationships between reinforcement contingencies and behavior are readily verifiable.

Theoretical models of dubious validity persist largely because they are not stated in refutable form. The lack of accurate knowledge of the

genesis of behavioral deviations further precludes any serious evaluation of suggested determinants that are so involved that they could never be produced under laboratory conditions. When the actual social-learning history of maladaptive behavior is known, principles of learning appear to provide a completely adequate interpretation of psychopathological phenomena, and psychodynamic explanations in terms of symptom-underlying disorder become superfluous. The spuriousness of the supposition that psychodynamic forces produce symptomatic behavior can be best illustrated by cases in which the antecedents of aberrant response patterns are known. Such examples are hard to obtain since they require the production of deviant behavior under controlled conditions. Ayllon, Haughton, & Hughes (1965) furnish a graphic illustration of how a bizarre pattern of behavior—which was

developed, maintained, and subsequently eliminated in a schizophrenic woman simply by altering its reinforcing consequences—was interpreted erroneously as a symptomatic manifestation of complex psychodynamic events by diagnosticians who were unaware of the specific conditions of reinforcement regulating the patient's behavior.

Unfortunately, the exact antecedents of deviant behavior are rarely known, and in the absence of powerful techniques that permit adequate control over behavioral phenomena, clinical endeavors have until recently lacked the self-corrective features necessary for eliminating weak or invalid theories of psychopathology. As a consequence, rival interpretations of social behavior have for decades retained a secure status with little risk that any one type of theory might prove more cogent than another.

In recent years there has been a fundamental departure from conventional views regarding the nature, causes, and treatment of behavioral dysfunctions. According to this orientation, behavior that is harmful to the individual or departs widely from accepted social and ethical norms is viewed not as symptomatic of some kind of disease but as a way that the individual has learned to cope with environmental and self-imposed demands. Treatment then becomes mainly a problem in social learning rather than one in the medical domain. In this conceptual scheme the remaining vestiges of the disease-demonic model have been discarded. Response patterns are not viewed as symptoms and their occurrence is not attributed to internal, pernicious forces.

Social learning and psychodynamic theories differ not only in whether they view deviant

behavior as a quasi disease or as a by-product of learning, but also in what they regard to be the significant controlling factors, and in the status assigned to internal events. As will be shown later, social-learning approaches treat internal processes as covert events that are manipulable and measurable. These mediating processes are extensively controlled by external stimulus events and in turn regulate overt responsiveness. By contrast, psychodynamic theories tend to regard internal events as relatively autonomous. These hypothetical causal agents generally bear only a tenuous relationship to external stimuli, or even to the “symptoms” that they supposedly produce. Freud’s famous case of Little Hans, which has been reinterpreted by Wolpe & Rachman (1960), illustrates some of the major differences in explanatory models.

Little Hans exhibited, among other things, a

phobia for horses. Freud (1955) interpreted the phobic behavior in the following manner:

He was not only afraid of horses biting him... but also of carts, of furniture-vans, and of buses (their common quality being, as presently became clear, that they were all heavily loaded), of horses that started moving, of horses that looked big and heavy, and of horses that drove quickly. The meaning of these specifications was explained by Hans himself: he was afraid of horses *falling down*, and consequently incorporated in his phobia everything that seemed likely to facilitate their falling down...[p. 265],

He (father) elicited from Hans the recollection of an event at Gmunden, the impression of which lay concealed behind that of the falling bus-horse. While they were playing at horses, Fritzl, the playmate of whom he was so fond, but at the same time, perhaps, his rival with his many girl friends, had hit his foot against a stone and had fallen down, and his foot had bled. Seeing the bus-horse fall had reminded him of this accident. ...The first person who had served Hans as a

horse must have been his father; and it was this that had enabled him to regard Fritzl as a substitute for his father when the accident happened at Gmunden....In the end his father went into the lumb symbolism, and recognized that there was an analogy between a heavily loaded cart and a body loaded with faeces, between the way in which a cart drives out through a gateway and the way in which faeces leave the body, and so on...[p. 126-127],

We can now recognize that all furniture-vans and drays and buses were only stork-box carts, and were only of interest to Hans as being symbolic representations of pregnancy; and that when a heavy or heavily loaded horse fell down he can have seen in it only one thing—a childbirth, a delivery. Thus the falling horse was not only his dying father but also his mother in childbirth [p. 128].

Freud's paper reports at least four incidents in which horses, actual or symbolic, were associated with fear-provoking experiences capable of producing a conditioned phobic reaction. Hans

had been frightened at seeing horses being beaten at a merry-go-round; he was warned to avoid horses for they might injure him; he became frightened when a friend was accidentally hurt while playing horses; and, in the episode that immediately preceded the onset of the phobic behavior, he was terrified by a bus accident in which he believed a horse was killed.

In the psychoanalytic schema the internal psychic disturbance is the basic cause or instigator of the phobic responses, while external stimuli (horses) supposedly exert little or no controlling influence over the deviant behavior except as a convenient focal point for Hans's projected Oedipal and castration feelings.

It (the phobia) extends to horses and on to carts, on to the fact that horses fall down and that they bite, on to horses of a particular character, on to carts that are heavily loaded. I will reveal at once that all these



characteristics were derived from the circumstance that *the anxiety originally had no reference at all to horses but was transposed on to them secondarily* [italics added] and had now become fixed upon those elements of the horse complex which showed themselves well adapted for certain transferences [p. 51].

This exposition fails to account for the variation in both the pattern and the intensity of Hans's anxiety reactions under different circumstances. In fact, the case data provide considerable evidence that external cues served as the primary eliciting and controlling stimuli for Hans's phobic responses rather than simply as incidental targets for projected feelings.

Let us consider the major traumatic episode which was related to the onset of Hans's phobia. While out walking with his mother Hans saw a *large bus-horse* fall and kick with its feet. He was terrified and thought the horse was killed in the

accident. There were three important elements in this stimulus complex—large horse, heavily loaded transport vehicle, and horse and vehicle traveling at high speed. The occurrence and intensity of Hans's subsequent phobic reactions varied predictably as a function of the specific patterning of these three critical stimulus elements. Hans was more frightened of large dray horses than of small horses, more frightened of a rapidly moving vehicle than of a slowly moving one, more frightened of heavily loaded vehicles than of empty ones, and frightened when a horse-drawn cart made a turn:

Hans: And I'm most afraid of furniture-vans too.

Father: Why?

Hans: I think when furniture-horses are dragging a heavy van they'll fall down.

Father: So you're not afraid with a small cart?

Hans: No. I'm not afraid with a small cart or with a

post-office van. I'm most afraid too when a bus comes along.

Father: Why? Because it's so big?

Hans: No. Because once a horse in a bus fell down.

Father: What did you think when the horse fell down?

Hans: Now it'll always be like this. All horses in buses'll fall down...[p. 49],

Father: When the horse fell down, did you think of your daddy?

Hans: Perhaps. Yes. It's possible...[p. 51].

Father: What carts are you still afraid of?

Hans: All of them.

Father: You know that's not true.

Hans: I'm not afraid of carriages and pair or cabs with one horse. I'm afraid of buses and luggage-carts, but only when they're loaded up, not when they're empty. When there's one horse and the cart's loaded full up, then I'm afraid; but when there are two horses and it's loaded full up, then I'm not afraid.

Father: Are you afraid of buses because there are so many people inside?

Hans: Because there's so much luggage on the top.

Father: When Mummy was having Hanna, was she loaded full up too? [pp. 90-91],

The Oedipal interpretation fails not only to account for the discriminative pattern of Hans's phobic behavior but also to explain satisfactorily why he was afraid of railways and locomotives as well, a phobia which probably generalized from the transport vehicle stimulus complex. The psychoanalytic interpretation would demand that the locomotive and the railway tracks were likewise symbolic representations of the castrating father and the impregnated mother.

The conceptual structure of causal sequences in psychodynamic theories of behavior is beleaguered by serious problems. An amorphous internal determinant cannot possibly account for

the remarkable variety of heterogeneous behaviors as well as changes both in their incidence and magnitude under different stimulus conditions, toward different persons, and at different times. How can a horse phobia be attributed to an underlying Oedipus complex and projected castration fears if a person responds phobically to *one* horse pulling a heavy loaded vehicle, but is relatively unafraid of *two* horses drawing a loaded vehicle? When diverse stimulus inputs produce correspondingly diverse behavioral expressions then any internal mediators implicated in the causal sequence must be at least equally specific and their activation must be closely regulated by discriminative environmental stimuli.

The conceptual difficulties associated with psychodynamic formulations apply equally to trait theories of personality. These approaches assume

that people possess generalized and stable response dispositions that determine behavior in a variety of situations. Consequently it is considered sufficient to sample some limited classes of response that are regarded as dependable indicators of how persons are likely to behave under particular conditions. The types of behaviors selected for measurement vary. A few of the assessment procedures that have been advocated at one time or another are brief samplings of overt behavior that bear some resemblance to the trait description, endorsements of statements that describe affective states, interests, or response patterns, and farfetched responses elicited by relatively ambiguous stimuli such as inkblots, ill-defined pictures, doll families, and incomplete sentences.

The basic assumption of trait theories—that persons display generalized modes of behavior

that can be predicted from a restricted sampling of responses—finds little empirical support. For purposes of illustration, let us consider the “trait” of aggressiveness. Several investigations (Bandura, 1960; Bandura & Walters, 1959) of social-learning determinants of aggressive behavior have shown that both adolescent and preadolescent boys display highly discriminative patterns of aggressive responses that vary considerably as a function of the persons with whom they are interacting (for example, parents, teachers, siblings, or peers). Furthermore, the incidence of aggression even toward the same objects differs widely depending upon whether physical, verbal, or more attenuated forms of responses are measured. The boys’ discriminative aggressive responsiveness closely reflected the considerable amount of discrimination training that they had undergone. The parents consistently

punished aggression directed toward themselves, but simultaneously encouraged and positively reinforced their sons' aggressive behavior toward persons outside the home.

It is evident from informal observation of differential contingencies characteristically applied to social response systems that, fortunately for survival purposes, cultural practices are much too variable to produce generalized traits. The likelihood that a given pattern of behavior will be rewarded, ignored, or punished is dependent upon, among other factors, the characteristics of the performer, the specific form and intensity of the behavior, the objects toward whom the actions are directed, the social situations in which they occur, and various temporal factors. Thus a high degree of behavioral flexibility is required if a person is to meet the complexities of ever changing environmental



demands. In the case of social response systems, most of which are characterized by high behavioral specificity, trait measurement is a disappointing pursuit. Indeed, a comprehensive review of the relevant empirical literature by Mischel (1968) reveals low intercorrelations among different measures purporting to assess the same trait, weak relationships between component parts of gross trait dimensions, and little consistency of behavior patterns in different stimulus situations. On the other hand, intellectual performances, which are more or less uniformly rewarded by different agents at different times and in different settings, show substantial consistency.

In the assessment process, behavioral data, however obtained, are typically converted into trait or psychodynamic constructs that are far removed from the actual feelings and actions of

the person being evaluated. This practice rests on the assumption that the abstractions represent more generic systems and, therefore, possess greater predictive power. As Mischel (1968) has noted in a review of evidence bearing on this issue, the transformation shifts the focus of attention from what a person *does* to speculations about what he *has*; from concern about the *client's behavior* to engrossment in the *diagnosticians categories* of behavior. The evidence indicates that these hypothetical constructions are better predictors of diagnosticians' semantic and conceptual stereotypes than of clients' actual attributes and psychological reality. It therefore comes as no surprise that assessment strategies deriving from the dynamic trait point of view have generally failed to match the predictive efficacy of actuarial methods (Meehl, 1954).

The tenacious belief in generalized response

dispositions is attributed by Mischel (1968) to the tendency to construe behavioral consistencies even from variable performances. Hence, generality may emerge in the inferential construct domain, whereas a high degree of specificity may obtain at the behavioral level. Among the factors listed as reinforcing the impression of consistency are included physical constancies in appearance, linguistic characteristics, and stylistic features; regularities in the stimulus situations in which a person is repeatedly observed; reliance upon broad and ambiguous trait categories that encompass heterogeneous behaviors; utilization of test items that require a person to rate his behavior in "typical" social contexts rather than in a variety of specific situations; and strong psychological pressures to maintain a consistent, stable view of events. Inconsistencies, therefore, tend to be resolved by glossing over, ignoring, or

reinterpreting discrepant evidence.

The preoccupation with internal psychic agents and energized traits has been largely responsible for the limited progress in development of empirically sound principles of human behavior. The gap between stimulus inputs and overt response events tends to be filled readily with diverse all-powerful, animistic constructs capable of generating and explaining almost any psychological phenomenon. These constructs, of course, lend themselves easily to pseudo explanations (Skinner, 1961) in which renaming of a behavioral phenomenon is offered as an explanation. For example, persons who exhibit withdrawal, delusional and hallucinatory behavior, inappropriate emotional responses, and behavioral deficits, will be labeled schizophrenic. The presence of these deviant behaviors is then attributed to an underlying schizophrenia, an

explanation that is completely circular and contains no information whatsoever about causal determinants. An adequate causal explanation must specify clearly the independent variables that produce and maintain the observed schizophrenic behavior. In a similar manner, traits, complexes, and dynamics, which represent the descriptive constructs of the assessor, often are made active entities within the client that supposedly cause his behavior.

The major deficiencies of theories that explain behavior primarily in terms of conjectural inner causes would have been readily demonstrated had they been judged, not in terms of their facility in interpreting behavioral phenomena that have already occurred, but rather on the basis of their efficacy in predicting or modifying them. Because the internal determinants propounded by these theories (such as mental structures, Oedipal

complexes, collective unconscious) could not be experimentally induced, and rarely possessed unequivocal consequences, psychodynamic formulations enjoyed an immunity to genuine empirical verification. If progress in the understanding of human behavior is to be accelerated, psychological theories must be judged by their predictive power, and by the efficacy of the behavioral modification procedures that they produce.

*ADVERSE CONSEQUENCES OF DISEASE  
INTERPRETATIONS OF DEVIANT BEHAVIOR*

The conceptualization of deviant behavior as manifestations of disease has, in several ways, impeded development of efficacious methods of behavioral change. In the first place, it led to heavy reliance upon physical and chemical interventions, unremitting search for drugs as quick remedies for interpersonal problems, and long-term neglect of

social variables as influential determinants of deviant response patterns. Secondly, the mislabeling, partly by historical accident, of social deviations as symptoms of mental illness established medical training as the optimal preparation for psychotherapeutic work. In fact, such training, because of its primary concern with somatic processes and pathologies, leaves one ill-prepared for devising and implementing methods that are successful in promoting favorable social change. Had educational processes, which also depend upon neurophysiological functioning, been historically misconstrued as principally medical phenomena, our society would undoubtedly be faced with the same critical shortage of educational facilities and well-trained instructional personnel that characterize our current “mental health” enterprises.

Although the designation of behavioral

eccentricities as manifestations of disease initially resulted in more humane treatment, as Szasz cogently points out, continued adherence to this analogy has become a serious hindrance. Many people who would benefit greatly from psychological treatment avoid seeking help because they fear being stigmatized as mentally deranged, which often carries deleterious social consequences. Those who are compelled by chronic distress to seek a solution to their interpersonal problems are typically ascribed a sick role and are regarded as relatively helpless, dependent, and incompetent in managing their daily lives. By having their behavioral deviations treated as expressions of internal psychic pathologies they are thereby relieved of the natural consequences of their actions. In this connection, it is important to distinguish judicious management of reinforcement contingencies



aimed at altering the course of future behavior from moral judgments of personal responsibility for past actions. There is little to be gained from condemning delinquents for their history of antisocial behavior, but there is much to be gained from having them experience new response consequences that will help them develop a more effective way of life. When individuals are labeled mentally ill, this often results not only in suspension of customary response consequences essential for change, but in substitution of contingencies that foster maladaptive tendencies (Ayllon & Michael, 1959). Moreover, as will be shown later, for people who undergo long-term institutionalization, the attendant stigmatization, the patient-role requirements of the mental hospital culture, the limited opportunities to perform behaviors that are necessary in community life, and the development of

institutional dependency produce further impediments to successful readjustment to typical environmental demands.

The medical orientation toward deviant behavior has resulted also in a disinterest in, and lack of facilities for, the modification of lesser, but nevertheless troublesome, forms of psychological problems. People with circumscribed behavioral difficulties are justifiably unwilling to label themselves mentally deranged and to enter into a protracted expensive treatment that offers no guarantee of success. Thus, for example, people who suffer from snake phobias may be unable to perform their work under certain conditions, to participate in camping and other outdoor activities, or to reside in locales inhabited by harmless snakes. Treatments derived from social-learning principles are now available that can effectively eliminate such phobias in any person in

a few sessions (Bandura, Blanchard, & Ritter, 1969). Psychological centers that offer brief and highly efficacious treatments for specific behavioral dysfunctions would provide valuable therapeutic services to many persons who would otherwise endure unnecessary restrictions in certain areas of their psychological functioning.

The designation of divergent beliefs and actions as “sick” may also have an important impact on the more general process of social change. Improvements in the conditions of life within a society require the continuous modification of its institutionalized patterns of behavior and the replacement of old standards of conduct with new ones that are more fitting to the altered circumstances. Proposed social reforms, however, typically meet with strong resistance, particularly if they represent marked departure from established traditions and threaten vested

interests. Consequently persons often find it necessary to violate institutionalized codes of behavior in order to force a change in the social system. In such instances, deviance serves a positive function in promoting constructive modifications. The conforming populace, despite its protestations, eventually profits from the nonconformists' deviance.

Resistance to advocated social changes sometimes takes the form of publicly labeling those who advocate divergent practices as emotionally disturbed. This diagnostic devaluation is most easily applied when social deviants attempt, as they usually do, to differentiate themselves from the general populace by adopting unconventional attire and hair styles or peculiar symbols and rituals. In some totalitarian societies it is not uncommon to silence authors who propose certain social and political reforms by

diagnosing them as mentally deranged and committing them to psychiatric hospitals (Crankshaw, 1963). Although our own society rarely imposes such legal sanctions, active nonconformists are often discredited by characterizing them as “perverts” and members of the “lunatic fringe.” A society would better preserve its potential for change by defining social deviance as innovative rather than “sick” behavior. Such a practice would favor evaluation of proposed changes on the basis of their merits and probable long-term consequences, as should be the case.

Since social control through stigmatizing deviance as psychic malfunction has gained currency in our society, it would be surprising if such mislabeling were confined to matters of cultural norms and objects. Even the diagnosticians themselves may yield to the

temptation to brand any dissidence as psychopathological. In one such illustration (Gitelson, 1962), departure from orthodoxy in psychoanalytic theory is explained not by factual and theoretical disagreements, but in terms of “pathological narcissism,” “transference neuroses,” and other psychodynamic malfunctions in dissenting members.

Szasz (1965), who has been especially concerned about the promotion of moral prescriptions in the guise of psychiatric diagnoses, has written widely on the contemporary misuse of the notion of mental illness. He argues that, in an effort to ensure more benevolent treatment of persons in difficulty, they are certified as afflicted with a mental disease. This advantage, however, is gained at the expense of stigmatization, degradation, and restriction of personal freedom. Rather than the “bootlegging of humanism” on

psychiatric grounds he advocates frank confrontation of the socio-ethical issues involved in societal practices and active efforts to bring about needed reforms. To take legalized abortion as an example, Szasz (1962) contends that it would be more honest to grant people the right to determine for themselves whether they wish to bring a child into the world than to invoke psychiatric illness as a subterfuge for performing abortions. As an analogy, if divorces were granted only on the basis of psychiatric certification of mental illness, the incidence of mental derangement would suddenly rise astronomically.

### **Interpretation of Causal Processes**

Preoccupation with internal response-producing agents has resulted in a disregard of external variables that have nevertheless been shown to exercise control over behavior. An

organism that is impelled from within but is relatively insensitive to environmental stimuli or to the immediate consequences of its actions would not survive for long. Human functioning, in fact, involves interrelated control systems in which behavior is determined by external stimulus events, by internal information-processing systems and regulatory codes, and by reinforcing response-feedback processes.

### **Stimulus Control of Behavior**

During initial phases of human development, stimuli, except those which are inherently aversive, exert little or no influence upon individuals. Eventually, however, as a result of undergoing either direct or vicarious experiences, individuals' behavior comes to be regulated by antecedent stimulus events that convey information about probable consequences of



certain actions in given situations. The development of appropriate anticipatory reactions to recurrent environmental cues has considerable functional and survival value. Indeed, an individual who did not learn to avoid physical hazards, who did not respond appropriately to traffic signals and other guiding cues, for example, and who remained indifferent to important social and symbolic stimuli, would suffer a painfully rapid extinction.

#### *STIMULUS CONTROL OF AUTONOMIC RESPONSIVENESS*

Many problems for which people seek relief involve distressing autonomic overactivity reflected in a variety of somatic complaints of a functional nature, including chronic “tension” and anxiety reactions, gastrointestinal disorders, and respiratory and cardiovascular disturbances. Conditioned emotionality is also generally

implicated, particularly during the acquisition phase, in obsessive-compulsive reactions, behavioral inhibitions, and phobic and other avoidance behaviors. Depressant drugs may provide temporary relief from intense autonomic responses, but in cases where they are under stimulus control, social-learning procedures that are capable of neutralizing the emotion-arousing properties of stimulus events offer the most direct and effective treatment.

Autonomic responses can be most readily brought under the control of environmental stimuli through classical conditioning operations. If a formerly ineffective or conditioned stimulus is closely associated with an unconditioned stimulus capable of eliciting a given physiological response, the former stimulus alone gradually acquires the power to evoke the physiological response or its equivalent. Although some types of autonomic

responses are more difficult to condition than others, almost every form of somatic reaction that an organism is capable of making, including respiratory and heart-rate changes, increases in muscular tension, gastrointestinal secretions, vasomotor reactions, and other indices of emotional responsiveness (Bykov, 1957; Kimble, 1961), has been classically conditioned to innocuous stimuli. Environmental events can likewise acquire the capacity to control electroencephalographic arousal through association with either external evocative stimuli or direct central stimulation (John, 1967).

Laboratory studies concerned with the production of asthmatic attacks illustrate how psychosomatic reactions can be brought under stimulus control. Noelpp & Noelpp-Eschenhagen (1951, 1952), for example, demonstrated that following repeated pairing of induced asthmatic

attacks with an auditory stimulus, many of the guinea pigs in the study exhibited respiratory dysfunctions characteristic of bronchial asthma in response to the conditioned auditory stimulus alone. Stimulus control of human asthmatic attacks is similarly demonstrated in an experiment by Dekker, Pelser, & Groen (1957). Two patients suffering from severe bronchial asthma inhaled nebulized allergens to which they were hypersensitive. After repeated inhalations of the allergen extract that served as the unconditioned stimulus for asthmatic attacks, inhalation of a neutral solvent of the allergen alone, which initially produced no respiratory changes, elicited attacks of asthma as demonstrated by clinical signs and vital capacity measures. In later phases of the experiment inhalations of pure oxygen and even the presentation of the mouthpiece, both formerly neutral stimuli, had acquired the power

to provoke asthmatic attacks which were indistinguishable from those induced by the allergen itself.

In the experiment described, asthmatic responses were conditioned to elements of the inhalation situation and apparatus through contiguous association. It is not surprising, therefore, that analyses of asthmatic behavior by Dekker & Groen (1956) produced an extremely varied array of highly specific eliciting stimuli in the group of patients studied; these included the sight of dust, radio speeches by influential politicians, children's choirs, the national anthem, elevators, goldfish, caged birds, the smell of perfume, waterfalls, bicycle races, police vans, and horses. Once the critical eliciting stimuli had been identified in a particular case, Dekker and Groen were able to induce attacks of asthma by presenting the conditioned stimuli in actual or in

pictorial form. In some cases, of course, more complex interpersonal events may serve as major evocative stimuli.

Of particular interest is the investigators' observation that intense emotional arousal itself failed to produce asthmatic reactions, whereas exposure to specific asthmatic conditioned stimuli typically provoked marked respiratory dysfunction. The latter observation is corroborated by Ottenberg, Stein, Lewis, & Hamilton (1958) in a study of the classical conditioning and extinction of asthmatic responses in guinea pigs. Asthma-like attacks, which readily occurred in the presence of conditioned stimuli, could not be induced by means of emotion-provoking procedures involving loud noises, painful stimulation, and electric shock. In view of these findings, one would expect that direct neutralization of specific eliciting

stimuli (Moore, 1965; Walton, 1960) would be effective in modifying asthmatic responses under the control of environmental stimuli, but that reduction of general emotional disturbances may have little impact on the respiratory disorder.

Both the processes and outcomes accompanying classical conditioning operations are considerably more complex than the general principle might imply. Persons often display differential susceptibility to autonomic conditioning, which suggests that other variables—possibly genetic, physiological, or psychological—are contributory factors. It will also be shown later that cognitive representation of the contingent relationship between conditioned and unconditioned stimuli markedly facilitates classical conditioning. These findings call into question peripheral theories of conditioning.

*Higher-Order Conditioning.* Many of the emotional responses that persons exhibit toward specific objects are not products of direct associations of affective experiences with the objects themselves. Some people, for example, may respond anxiously toward snakes without having had any direct aversive encounters with them. Similarly, persons often display strong emotional arousal at the sight or mention of unpopular minority groups or nationalities on the basis of little or no personal contact. These types of reactions are frequently established on the basis of higher-order sequences depending on the presence or absence of particular stimuli. This process is most clearly illustrated in simple laboratory studies in which certain responses are reinforced only in the presence of one stimulus (e.g., green light), but never in a different stimulus context (e.g., red light). After the discrimination



has been formed, a person responds only in the presence of the green light. Thus by introducing into the environment a discriminative stimulus that signifies whether a particular performance is likely to be reinforced, a considerable degree of control over behavior can be achieved.

The following quotation presents a more telling example of stimulus control of behavior occurring under naturalistic conditions. In this illustration an elaborate pattern of aggressive behavior by an autistic boy was rarely exhibited in the father's presence but freely expressed in his absence.

Whenever her husband was home, Billy was a model youngster. He knew that his father would punish him quickly and dispassionately for misbehaving. But when his father left the house, Billy would go to the window and watch until the car pulled out. As soon as it did, he was suddenly transformed. . . . 'He'd go into my closet and

tear up my evening dresses and urinate on my clothes. He'd smash furniture and run around biting the walls until the house was destruction from one end to the other. He knew that I liked to dress him in nice clothes, so he used to rip the buttons off his shirts, and used to go in his pants' [Moser, 1965, p. 96].

Laboratory investigations of stimulus control processes often involve simple situations in which stimuli differ either on a single attribute or on a few easily identifiable dimensions. In most real life circumstances the cues which designate probable consequences usually appear as part of a bewildering variety of irrelevant events. One must, therefore, abstract the critical feature common to a variety of situations. Behavior can be brought under the control of abstract stimulus properties if responses to situations containing the critical element are reinforced, whereas responses to all other stimulus patterns lacking the essential

element go unreinforced. It should be noted here that the controlling function of various social and environmental stimuli is usually established simply by informing people about the conditions of reinforcement that are operative in different situations, rather than by leaving them to discover it for themselves through a tedious process of selective reinforcement. However, the existence of differential consequences is essential to maintain stimulus control produced through instructional means.

In discussions of stimulus control processes it has been customary to distinguish between the eliciting and the discriminative or response-directing functions of stimulus events (Skinner, 1961). As noted earlier, autonomic responses are elicited by their controlling stimuli, independently of their subsequent consequences. An asthmatic conditioned stimulus, for example, will induce

respiratory changes apart from the social effects resulting from somatic reactions. On the other hand, in the case of instrumental responses, the discriminative stimuli simply modify the probability that a given response will occur, but they do not elicit it. Moreover, the stimulus control of operant or instrumental behaviors is established and maintained by differential response consequences rather than through temporal association of sets of stimulus events.

Under naturalistic conditions behavior is generally regulated by the characteristics of persons toward whom responses are directed, the social setting, temporal factors, and a host of verbal and symbolic cues that signify predictable response consequences. Social situations, particularly those involving a large number of multidimensional cues, seldom recur with exactly the same constituent elements. Because of the

constant variation in the nature and patterning of stimuli, social learning would be an interminable and exceedingly laborious process if responses were entirely specific to the situation in which they had been originally reinforced. However, performances that have been reinforced in the presence of certain cues are also controlled by other stimuli which are related to them either physically or semantically. After generalized stimulus control has been established it can be narrowed, if necessary, by differential reinforcement of responses to stimuli whose differences are progressively reduced (Terrace, 1966).

### **Outcome Control of Behavior**

An organism that responded anticipatorily to informative environmental cues but remained unresponsive to the outcomes produced by its

behavior would enjoy a tragically brief life-span. Fortunately, instrumental responses are extensively controlled by their immediate consequences. Responses that result in nonreward or punishing effects are generally eliminated, whereas those that are successful in securing positively reinforcing outcomes are retained and strengthened. There is some evidence (Kimmel, 1967; Miller, 1969) that autonomic responses, which formerly were believed to be subject only to classical conditioning, can also be modified instrumentally to some degree by differential consequences. Indeed, DiCara & Miller (1968) were able to establish remarkably precise control over vasomotor activities through differential reinforcement.

*External Reinforcement.* Research conducted by Harris, Wolf & Baer (1964), designed to modify gross behavior disorders in nursery school

children by altering their teachers' attentional responses, provides impressive demonstrations of how deviant behavior can be controlled by its social consequences. Each case involved an intrasubject replication design in which behavior was successively eliminated and reinstated by systematic variation of reinforcement contingencies. This is a most powerful method for isolating the controlling conditions of behavioral phenomena. The procedure in any given case contains four steps.

First, the child is observed for a period of time to measure the incidence of the deviant behavior, the contexts in which it typically occurs, and the reactions it elicits from teachers. In one case an extremely withdrawn boy spent approximately 80 percent of his time in solitary activities in isolated areas of the nursery school. Observation revealed that the teachers unwittingly reinforced his

solitariness by paying a great deal of attention to him, reflecting his feelings of loneliness, consoling him and encouraging him to play with other children. When he did happen to join other children, the teachers took no particular notice.

In the second phase of the program a new set of reinforcement practices is substituted. Continuing with the above example, the teachers stopped rewarding solitary play with attention and support. Instead, whenever the boy sought out other children, the teacher immediately joined the group and gave it her full attention. In a short time, the boy's isolation declined markedly and he was spending about 60 percent of his time playing with other children (Figure 1-1).

After the desired changes in behavior have been produced, the original reinforcement practices are reinstated to determine if the initial



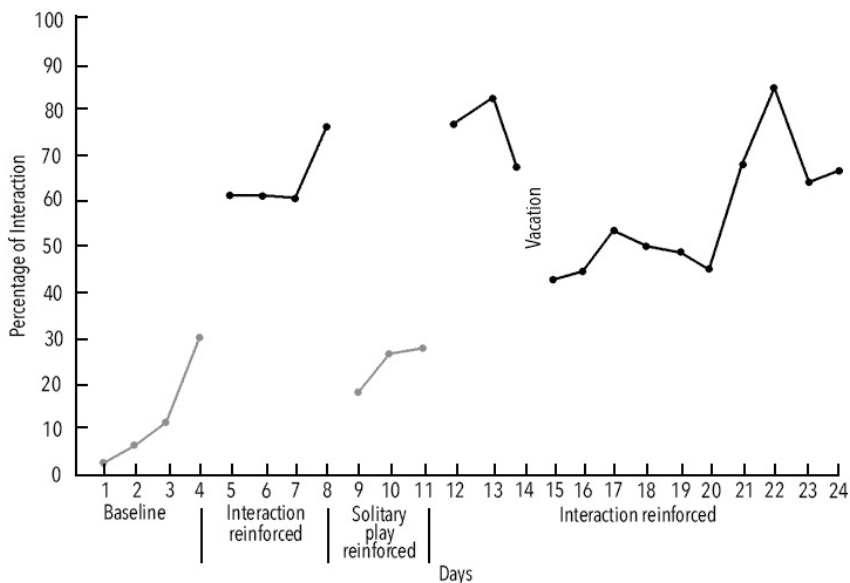


Figure 1-1. Percentage of time a withdrawn boy spent in social interaction before treatment began, during periods when social behavior toward peers was positively reinforced, and during periods when teachers gave attention for solitary play. Harris, Wolf, & Baer, 1964.

behavior was in fact maintained by its social consequences. In this third stage, for example, the teachers again paid no attention to the child's sociability but instead responded with comforting ministrations whenever he was alone. The effect of this traditional "mental hygiene" treatment was to increase the child's withdrawal to the original high level (Figure 1-1).

In the final phase of the program the therapeutic contingencies are reintroduced, the deviant behavior is eliminated and the desired behavior patterns are generously reinforced. In the above case, after social responsivity was well established the frequency of positive attention from adults was gradually diminished as the boy derived increasing enjoyment from play activities with his peers. Follow-up observations disclosed that the boy maintained his sociable pattern of behavior, which contrasted markedly with his

previous isolation.

Children with a wide variety of behavior disorders have participated in such programs, and in each case their maladaptive behavior was eliminated, reinstated, and removed a second time simply by altering teachers' social responsiveness (Harris, Wolf, & Baer, 1964). Additional demonstrations of reinforcement control of grossly deviant behavior in both children and adults are provided by Ayllon and his associates (Ayllon & Azrin, 1965; Ayllon & Michael, 1959) and by Wolf, Risley, & Mees (1964).

Reinforcement control of behavior is further demonstrated by evidence that different frequency and patterning of outcomes produce different types of performance (Ferster & Skinner, 1957). When subjects are rewarded each time they exhibit the desired behavior (*continuous*

schedule), and later the reinforcement is completely withdrawn, they are likely to increase responsiveness for a brief period of time and then to display a rapid decrease in performance, often accompanied by emotional reactions.

Sometimes behavior is reinforced only after a specified period of time has elapsed (*fixed-interval* schedule). Pay periods, eating schedules, recreational times, and other regularly scheduled rewarding activities illustrate the temporal cycles of reinforcement regulating some aspects of human behavior. When rewards are dispensed on a fixed temporal basis the payoff is the same regardless of the amount of behavior produced during the intervening period. Under these conditions, once a person develops a temporal discrimination, the response output following reinforcement is very low but accelerates rapidly as the time for the next reinforcement approaches.

In naturalistic situations where temporal reinforcement cycles may range over several hours, days, weeks, or even months, social approval or coercive forms of pressure are usually brought to bear in order to maintain a steady rate of performance. Nevertheless, even with these added inducements, the fixed-interval schedule is likely to generate only the minimum output expected in a given situation, particularly if the activity itself is somewhat unpleasant. On the other hand, where given performances have become intrinsically rewarding, satisfactions derived from the activity itself may greatly outweigh the influence of temporally occurring rewards.

Much human behavior is sustained by ratio schedules in which reinforcement is made contingent upon the amount of behavior rather than on the passage of time. In a *fixed-ratio*

schedule a person must complete a specified amount of work for each reinforcement. Since under these circumstances reinforcement depends upon the person's own behavior, these schedules usually generate high and stable responsiveness. By starting with a low ratio and gradually raising the number of performances required per reinforcement, very high performance rates can be developed and maintained for a long period with minimum reinforcement. Although ratio schedules are exceedingly effective in generating a high behavioral output, persons in extra-laboratory situations, where they have considerably more freedom of action, are likely to withdraw from situations with schedules requiring substantial performances for minimal returns, and to select more beneficent reinforcing agents.

In everyday life most reinforcements are available not only on an intermittent basis, but

also on variable schedules. The effects of *variable-interval* and *variable-ratio* schedules on performance have been extensively studied under controlled laboratory conditions. In the former case, the length of time between successive reinforcements is varied randomly around some mean temporal value; in the variable-ratio schedules, the number of responses per reinforcement is varied around a selected average ratio. Since the reinforcers are dispensed unpredictably, the usual temporal or rate discriminations that result in cyclic responsivity cannot develop; consequently, variable schedules generate higher rates of response and more stable and consistent performances than those in which outcomes occur on a regular or fixed basis. However, even under irregular reinforcement, ratio schedules are more effective than interval schedules. Research evidence in fact reveals that,

of all the variations in scheduling procedures available, the variable-ratio schedule is most powerful in sustaining behavior. A casual observation of the patrons of the gambling devices at Las Vegas attests to the generality and validity of laboratory findings.

Evidence of schedule control of behavior has important implications for the understanding of behavior and for its modification. Those who have been reared under more or less continuous reinforcement conditions are likely to become easily discouraged and to cease responding when faced with frustrating nonreward or failure. By contrast, persons whose response patterns have been reinforced only intermittently will persist in their behavior for a considerable time despite setbacks and infrequent reinforcement. This, of course, is the reinforcement history that is most characteristic of all stable response patterns



including deviant ones. Moreover, when efforts are made to extinguish such behavior, it is not unusual for a parent or other persons to give in temporarily by rewarding the behavior, particularly if it goes on unabated or increases in rate or intensity. Any reinforcements occurring during the extinction process, however, will reinstate the behavior, often at a higher level than if extinction had not been attempted.

There are other subtle variations in the patterning of reinforcement that significantly influence the characteristics of behavior. As will be shown later, differential reinforcement of behavior that is persistent, or of high magnitude, is another form of intermittence that establishes deviant and obstreperous behavior of unusual resiliency. Reinforcements can also be applied in such a way as to produce delayed behavior. This outcome is achieved in laboratory studies by making rewards

available after a given period of time has elapsed, but only if the subject has refrained from responding during the interval. Each time the subject responds prematurely the enforced waiting period is begun all over again. By gradually lengthening the time interval, self-control in the subject can be increased.

In everyday life different classes of social behavior are controlled by *multiple schedules of reinforcement* operating either concurrently or alternately. This process is most dramatically illustrated in an experiment conducted by Ferster (Ferster & Skinner, 1957), in which the right-hand responses of a subject were reinforced on a fixed-ratio schedule, whereas responses with the left hand were reinforced simultaneously on a variable-ratio schedule. The subject produced two remarkably different sets of performances, each corresponding to the typical response-rate curves

of these types of schedules. Finally, it should be noted that different types of positive and negative consequential events possess differential controlling power. The theoretical issues and empirical findings relevant to this reinforcement variable will be considered in subsequent chapters of this book.

*Vicarious Reinforcement.* The discussion thus far has been concerned with the extent to which responsiveness is regulated by external outcomes impinging directly upon a performer. There is considerable evidence (Bandura, 1965) that the behavior of observers can be substantially modified as a function of witnessing other people's behavior and its consequences for them. Observation of rewarding consequences generally enhances similar performances, whereas witnessing punishing outcomes has an inhibiting effect on behavior. Systematic investigations of the

relative efficacy of vicarious and direct reinforcement reveal that the changes exhibited by observers are of the same magnitude (Kanfer, 1965) or, under certain conditions, may even exceed those achieved by reinforced performers (Berger, 1961; Marlatt, 1968). Moreover, vicarious reinforcement processes are governed by variables such as the percentage (Bisese, 1966; Kanfer, 1965), intermittence (Rosenbaum & Bruning, 1966), and magnitude (Bruning, 1965) of reinforcement in essentially the same manner as when they are applied directly to a performing subject. Although the efficacy of vicarious reinforcement practices is well established, the behavioral changes displayed by observers may be interpreted in several ways.

One possible explanation is in terms of the discriminative or informative function of reinforcing stimuli presented to the model.

Response consequences experienced by another person undoubtedly convey information to the observer about the probable reinforcement contingencies associated with analogous performances in similar situations. Knowledge concerning the types of responses that are likely to meet with approval or disapproval can later serve a self-instructional function in facilitating or inhibiting emulative behavior. The information gained from witnessing outcomes experienced by others would be particularly influential in regulating behavior under conditions where considerable ambiguity exists as to what actions are permissible or punishable, and where the observer believes that the models' contingencies apply to himself as well. It is highly unlikely, for example, that witnessing social approval for physical aggression exhibited by a person occupying a unique role, such as a policeman,

would enhance imitative aggressiveness in observant citizens to any great extent. Experiments are therefore needed that test the magnitude of vicarious reinforcement effects as a function of comparability of social sanctions customarily applied to models and to observers.

Typically, models' responses are differentially reinforced depending upon the persons toward whom the behavior is directed and the social settings in which it is expressed. When differential consequences are correlated with different stimulus conditions, observation of the reinforcement pattern associated with the models' responses helps the observer to identify the social or environmental stimuli to which the modeled behavior is most appropriate. These relevant cues may be difficult to distinguish without the observed informative feedback. Hence, through repeated exposure to the outcomes of others, an

observer not only acquires knowledge of predictable reinforcement contingencies, but he may also discern the situations in which it is most appropriate to exhibit a given pattern of behavior. The resultant discrimination learning can later facilitate the performance of matching responses in the presence of the cues to which the model previously had been responding with favorable consequences (Church, 1957; McDavid, 1962; Paschke, Simon, & Bell, 1967).

Observation of reinforcing outcomes and the models' concomitant reactions may also have important activating or motivational effects on an observer. The mere sight of highly valenced reinforcers can produce anticipatory arousal which, in turn, will affect the level of imitative performance. Thus, for example, witnessing a performer rewarded with a culinary treat for executing a given sequence of responses will

convey the same amount of information about the probable reinforcement contingencies to a famished and to a satiated observer, but their subsequent imitative performances will, in all likelihood, differ radically because of the differential effects of deprivation state on the activating power of the anticipated incentive. Similarly, variations in the magnitude of observed reinforcers, while providing equivalent information about the permissibility of matching responses, have different motivational effects on observers (Bruning, 1965). As in the case of direct reinforcement, incentive-produced motivation in observers is most likely to affect the speed, intensity, and persistence with which matching responses are executed.

A vicarious reinforcement event not only provides information concerning probable reinforcement contingencies, knowledge about the



types of situations in which the behavior is appropriate, and displays of incentives possessing activating properties, but it also includes affective expressions of models undergoing rewarding and punishing experiences. As was mentioned earlier, the pleasure and pain cues emitted by a model generally elicit corresponding affective responses in the viewer. These vicariously aroused emotional responses can readily become conditioned either to the modeled responses themselves, or to environmental stimuli that are regularly correlated with the performer's affective reactions. As a consequence the subsequent initiation of matching responses by the observer or the presence of the correlated environmental stimuli is likely to generate some degree of emotional arousal. In a similar manner, witnessing the nonoccurrence of anticipated aversive consequences to a model can extinguish in

observers previously established emotional responses that are vicariously aroused by modeled displays. It is therefore possible that the facilitative or suppressive effects of observing the affective consequences for the model may be partly mediated by the vicarious conditioning or extinction of emotional responses.

Finally, reinforcements administered to another person may have important consequences in social evaluation. Punishment is apt to devalue the model and his behavior, whereas models who receive praise and admiration tend to be attributed prestige and competence (Bandura, Ross, & Ross, 1963; Hastorf, 1965). Changes in model status, in turn, can significantly affect observers' subsequent performance of matching responses. A particular vicarious reinforcement event, depending upon its nature and context, may thus produce behavioral changes in observers

through any one or more of the five processes outlined.

The effects of observed consequences upon performance are also likely to be influenced by the social conditions under which the vicarious events occur. Almost without exception, the studies discussed above employ a paradigm in which observers' behavior is measured after they have witnessed another person either rewarded or punished by an agent with whom the observers never have any contact and in social settings that differ from their own. Observed consequences may have different behavioral effects under conditions where the reinforced performers and the observers are members of the same group who are present in the same setting and interacting with the same social agents. Observers who witness other members rewarded for a certain pattern of behavior may temporarily increase

similar responding, but if their behavior is consistently ignored they are apt to discontinue the modeled behavior or even respond negatively to the agent's preferential treatment.

*Self-Reinforcement.* Although the controlling power of externally occurring consequences cannot be minimized, self-reinforcement may frequently outweigh the influence of external outcomes in governing social behavior, particularly in the case of older children and adults. Until recently, self-reinforcement phenomena have been virtually ignored in psychological theorizing and experimentation, perhaps as a result of preoccupation with infrahuman learning. Unlike humans, who continually engage in self-evaluative and self-reinforcing behavior, rats or chimpanzees are disinclined to pat themselves on the back for commendable performances, or to berate

themselves for getting lost in culs-de-sac. By contrast, people typically set themselves certain standards of behavior and self-administer rewarding or punishing consequences depending on whether their performances fall short of, match, or exceed their self-prescribed demands.

Self-reinforcing responses are to some extent directly established through selective reinforcements administered initially by socialization agents. In this learning process an agent adopts a criterion of what constitutes a worthy performance and consistently rewards persons for matching or exceeding the adopted standard, while nonrewarding or punishing performances that fall short of it. When subsequently persons are given control over the administration of reinforcers they are likely to reinforce themselves in a similarly selective manner. In a study investigating the effects of

miserly and indulgent training on rate of self-reinforcement, Kanfer & Marston (1963) rewarded the performances of some adults generously with token reinforcers accompanied by an approving attitude toward self-reward, whereas with others the experimenter parted grudgingly with a few tokens and cautioned subjects against requesting rewards for undeserving performances. Those who received lenient training subsequently rewarded themselves far more frequently on a different task than subjects who were stringently trained even though the achievements for both groups were comparable.

There exists a substantial body of evidence that modeling processes play a highly influential role in the transmission of self-reinforcement patterns. In the prototypic experiment (Bandura & Kupers, 1964) subjects observe a model

performing a task in which he adopts either a high performance standard or a relatively low criterion for self-reinforcement. On trials in which the model attains or exceeds the self-imposed demand he rewards himself materially and expresses positive self-evaluations, but when his attainments fall short of the adopted behavioral requirements he denies himself available rewards and reacts in a self-derogatory manner. Later observers perform the task, during which they receive a predetermined range of scores and the performances for which they reward themselves are recorded. Within this general paradigm the independent and interactive effects of a variety of theoretically relevant variables have been studied including, among others, prior reinforcement history for achievement behavior and degree of difference in ability from comparison models (Bandura & Whalen, 1966); presence of conflicting

modeling cues (Bandura, Grusec, & Menlove, 1967; McMains & Liebert, 1968), rewarding qualities of the model and social reinforcement of the model's standard-setting behavior (Bandura, Grusec, & Menlove, 1967); whether material self-reward is accompanied by verbal self-evaluation (Liebert & Allen, 1967); and the generosity with which symbolic rewards are self-administered (Marston, 1965a).

The results of these studies show that people generally adopt the standards for self-reinforcement exhibited by exemplary models, they evaluate their own performances relative to that standard, and then they serve as their own reinforcing agents. For instance, those who have been exposed to models setting low standards tend to be highly self-rewarding and self-approving for comparatively mediocre performances. By contrast, persons who have



observed models adhere to stringent performance demands display considerable self-denial and self-dissatisfaction for objectively identical accomplishments. These findings illustrate how self-esteem, self-concept and related self-evaluative processes can be conceptualized within a social-learning framework. From this perspective, a negative self-concept is defined in terms of a high frequency of negative self-reinforcement and conversely, a favorable self-concept is reflected in a relatively high incidence of positive self-reinforcement (Marston, 1965b).

Although specific patterns of self-reinforcing responses can be acquired observationally without the mediation of direct external reinforcement, undoubtedly the valuation of performances that fall short of, match, or exceed a reference norm results partly from past differential reinforcements. Thus, for example,

parents who expect their children to exceed the average performance of their group in whatever tasks they undertake will selectively reward superior achievements and punish or nonreward average and lower level attainments. Differential achievement levels thus assume positive and negative valence and the performance standard common to the various activities is eventually abstracted and applied to new endeavors. That is, a person for whom average performances have been repeatedly devalued will come to regard modal achievements on new tasks as inadequate and attainments that surpass modal levels as commendable. Once the evaluative properties of differential accomplishments are well established, adequate or inadequate matches are likely to elicit similar self-reinforcing responses irrespective of the specific performances being compared. At this stage the whole process becomes relatively

independent of external reinforcement and the specific contingencies of the original training situations, but it remains dependent upon cognitive evaluations based on the match between self-prescribed standards, performance, and the attainments of reference models. Social comparison processes become involved because in the case of most performances objective criteria of adequacy are lacking; hence the attainments of other persons must be utilized as the norm against which meaningful self-evaluation can be made.

Under naturally occurring conditions modeling and reinforcement practices often operate concurrently in ways that either supplement or counteract each other. Findings of research in which both of these sources of influence are varied simultaneously (McMains & Liebert, 1968; Mischel & Liebert, 1966; Rosenhan, Frederick, & Burrowes, 1968) show that self-rewards are most sparingly

administered when stringent performance standards have been consistently modeled and imposed, whereas social- learning conditions in which persons both model and reinforce lenient behavioral demands produce generous self-reward patterns of behavior. In everyday life people frequently model the very behavior they decry in others. Discrepant practices in which models prescribe stringent standards for others but impose lenient ones upon themselves, or impose austere demands on themselves and lenient ones on others, reduce the likelihood that high norms will be internalized.

Of particular relevance to self-regulatory processes is evidence that self-monitored reinforcement can, in fact, maintain behavior. To test the relative efficacy of self-monitored and externally imposed systems of reinforcement, Bandura & Perloff (1967) conducted an

experiment in the following manner: Children worked at a task in which they could achieve progressively higher scores by performing increasingly more effortful responses. Children in the self-reinforcement condition selected their own achievement standards and rewarded themselves whenever they attained their self-prescribed norms. Children assigned to an externally imposed reinforcement condition were matched with the self-reward group so that the same performance standard was set for them and the reinforcers were automatically delivered whenever they reached the predetermined level. To ascertain whether subjects' behavioral productivity was due to the operation of contingent reinforcement or to gratitude for the rewards that were made available, children in an incentive-control group performed the task after they had received the supply of rewards on a

noncontingent basis. A fourth group worked without any incentives to estimate the amount of behavior produced by the properties of the task itself. Because the capacity to maintain effortful behavior over time is the most important attribute of a reinforcement operation, the dependent measure was the number of responses the children performed until they no longer wished to continue the activity.

As shown graphically in Figure 1-2, both self-monitored and externally imposed reinforcement systems sustained substantially more behavior than did either the noncontingent reward or the nonreward condition, which did not differ from each other. Of even greater interest is the prevalence with which children in the self-monitored condition imposed upon themselves highly unfavorable schedules of reinforcement. Not a single child chose the lowest score which

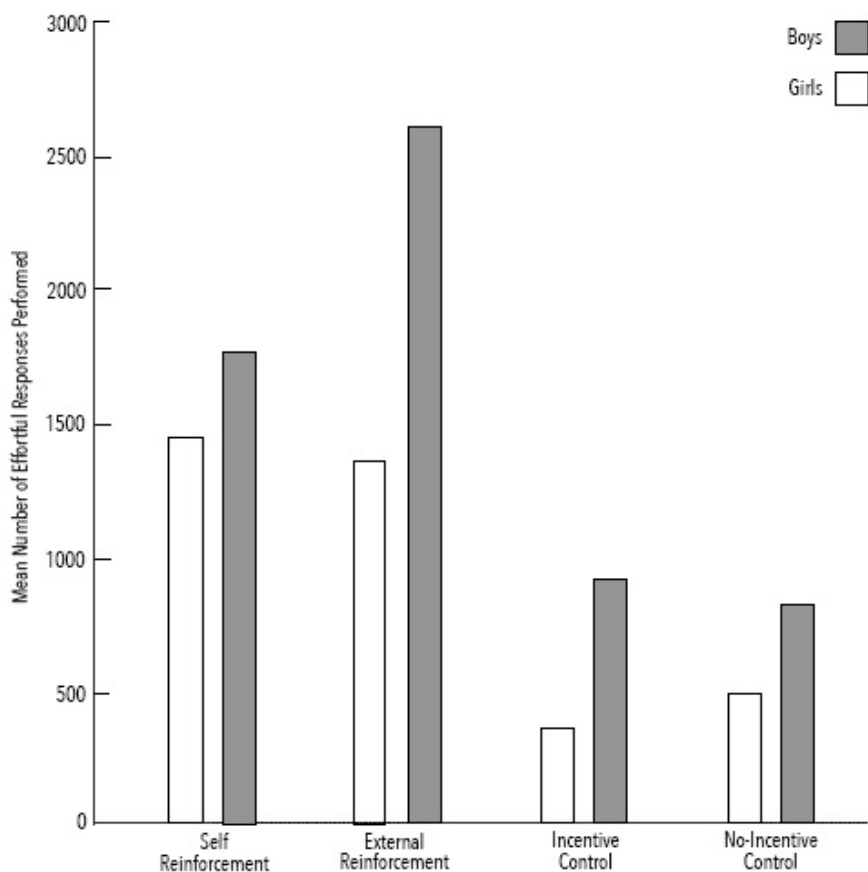


Figure 1-2. Behavioral productivity of children under conditions in which their responses were self-reinforced or externally reinforced, or in which they were rewarded noncontingently or not at all. Bandura & Perloff, 1967.

required the least effort, while approximately half of them selected the highest achievement level as the performance meriting self-reward. Moreover, a third of the children subsequently altered their initial standard to a higher level, without a commensurate increase in amount of self-reward, thereby imposing upon themselves a more unfavorable ratio of work to reinforcement. This behavior is all the more striking because the self-imposition of stringent performance demands occurred in the absence of any social surveillance and under high permissiveness for self-reward.

It can be reasonably assumed that most older children have acquired standards of achievement through modeling and differential reinforcement and have undergone experiences in which rewarding oneself for performances judged to be unworthy has been socially disapproved. Hence, under conditions where persons are provided



with ample opportunities to optimize their material outcomes by engaging in behavior which has low self-regard value, strongly conflicting tendencies are likely to be aroused. On the one hand, individuals are tempted to maximize rewards at minimum costs of effort to themselves, but on the other hand, low quality performances produce negative self-evaluative consequences which, if sufficiently strong, may inhibit undeserving self-compensation. Indeed, many of the children in the experiment set themselves performance requirements that incurred high effort costs at minimum material recompense. These findings are at variance with what one might expect on the basis of reward-cost theories, unless these formulations include the self-esteem costs of rewarding devalued behavior.

After a self-monitored reinforcement system has been well established, a given performance

produces two sets of consequences—a self-evaluative reaction as well as some external outcome. In many instances self-generated and externally occurring consequences may conflict, as when certain courses of action are approved and encouraged by others, but if carried out would give rise to self-critical and negative self-evaluative reactions. Under these circumstances, the effects of self-reinforcement may prevail over external influences. Conversely, response patterns may be effectively maintained by self-reinforcement operations under conditions of minimal external support. It is perhaps because of the stabilizing effects of self-reinforcement that persons do not ordinarily behave like weathervanes in the face of conflicting contingencies of reinforcement which they repeatedly encounter in their social environment. The fact that self-reinforcement may substitute

for, supplement, or override the effects of externally occurring outcomes (Kanfer, 1968) complicates interpretation of behavioral changes supposedly due to external reinforcement.

Discussions of psychopathology generally emphasize deficit conditions, response inhibitions, and avoidance mechanisms. However, personal problems frequently result from dysfunctions in self-reinforcement systems. Many of the people who seek treatment are neither incompetent nor anxiously inhibited, but they experience a great deal of personal distress stemming from excessively high standards for self-evaluation, often supported by unfavorable comparisons with models noted for their extraordinary achievements. This process typically gives rise to depressive reactions, to feelings of worthlessness and lack of purposefulness, and to lessened disposition to perform because of negative self-

generated consequences. In its more extreme forms this problem is reflected in behaviors designed to escape self-generated anguish through alcoholism, grandiose ideation, unwillingness to engage in activities that may have important self-evaluative implications, and other forms of avoidance behavior. The modification of self-reinforcement patterns constitutes a principal psychotherapeutic objective in conditions involving burdensome self-demands.

Social behavior is usually regulated to some extent by covert self-reinforcing operations which rely upon symbolically generated consequences in the form of self-commendation, esteem-enhancing reactions, or self-deprecation. Persons who have failed to develop self-monitoring reinforcement systems, or those who make self-reward contingent upon skillful performance of antisocial behavior, require considerable social surveillance

to ensure that they do not transgress. Similarly, individuals who set lax behavioral standards for themselves are inclined to display low achievement behavior and a liberal self-gratification pattern of life.

### **Symbolic Regulation of Behavior**

Some psychological theories, while acknowledging that stimulus-response covariations are mediated by covert events, nevertheless adhere rigorously to causal explanations of behavior couched almost exclusively in terms of external manipulable variables. The pursuit of external causes rests on the basic assumption that covert processes are lawfully determined by externally occurring events and, therefore, they can be bypassed in the prediction and control of behavior. This view has been advocated most forcefully by Skinner (1953):

“The objection to inner states is not that they do not exist, but that they are not relevant in a functional analysis. We cannot account for the behavior of any system while staying wholly inside it; eventually we must turn to forces operating upon the organism from without [p. 35].”

The common practice of invoking spurious inner states or agents as determiners of behavior has also produced justifiable wariness of inferential variables. After a given response pattern has been attributed to the action of a psychic homunculus, the search for controlling conditions promptly ceases. Although the use of the more colorful animistic entities in explanatory schemes is declining, the tendency to offer new descriptive labels for behavioral phenomena in the guise of explanations remains a flourishing practice.

The relative neglect of experiential phenomena results primarily from their limited accessibility. Thought processes are directly accessible only to the person within whom they occur and therefore their presence, absence, and exact nature cannot be independently verified. As a consequence, one is forced to rely upon verbal self-reports and other indirect indices of events occurring at a private level. In discussions of the methodological problems and theoretical issues regarding symbolic processes it is customary to belabor the limitations and inaccuracies of self-reports. It is emphasized that, due to defective self-descriptive facility and various distorting influences, public and private events may be imperfectly correlated. Not only are private events difficult to identify, but since they cannot be directly manipulated they have limited value in the causal analysis or practical control of behavior. These dissuading

arguments, however, never cite the innumerable studies demonstrating that, under many conditions, self-described covert events have much greater predictive power and regulatory influence over behavior than the externally manipulated variables typically assigned the central explanatory role in change processes.

There exists ample evidence that one cannot account satisfactorily for human behavior while remaining entirely outside the organism, because overt behavior is often governed by self-generated stimulation that is relatively independent of environmental stimulus events. For purposes of illustration, let us consider an experiment conducted by Miller (1951) to demonstrate how emotional responding can be brought under thought control. Students were asked to pronounce aloud the symbols of *T* and *4* as they were presented in a random sequence. The



utterance *T* was consistently followed by shock stimulation, whereas the *4* was never shocked. After the discrimination had been established, subjects were presented with a series of dots and instructed to think *T* to the first dot, *4* to the second one, and so on in an alternating sequence. Subjects displayed a highly discriminative pattern of autonomic responses with thoughts of *T* eliciting large autonomic responses and thoughts of *4* producing virtually no reaction. This discriminative responding cannot be accounted for in terms of the properties of the external dot stimuli, which are identical and merely signal the occasions for self-generated cognitive activities that produce emotional responsiveness. In fact, the trivial function of external stimuli could be entirely eliminated simply by instructing subjects to generate the aversive and neutral thoughts in an unpredictable sequence and to signal by a key

press whichever cognitive event they were about to produce. Knowledge of the subject's pattern of self-generated thoughts would permit accurate prediction of his autonomic responses. In naturalistic situations a brief external stimulus often initiates a long chain of cognitive activities that is largely determined by mediational associative linkages rather than by the temporally remote environmental input.

Under conditions where thought processes essentially serve as the first link in causal sequences, one can predict behavior most accurately on the basis of subject-defined internal stimulation. Until instruments that can discriminate subtle differences between symbolic events are developed, a comprehensive approach to the understanding of human behavior will have to rely upon an individual both as the *agent* and the *object* of study. Most current experimentation

simply avoids the issues of internal stimulus control by confining research to behavioral phenomena that can be brought under the influence of physical properties of external stimuli.

In a paper devoted to the control of implicit events Homme (1965) indicates that the problems of covert response definition and detection have been needlessly exaggerated. He rightfully contends that under most conditions the presence or absence of covert activities can be easily detected by the person in whom they are occurring. As will be shown in the concluding chapter, persons can not only reliably discriminate internal events, but they can manipulate them by making self-reinforcement contingent upon their occurrence. Furthermore, thought-induced affective reactions may be successfully employed for purposes of controlling one's own overt behavior. In the above instances implicit activities

constitute either important phenomena in their own right or causal antecedents rather than mere internal accompaniments of behavioral and environmental events.

There are innumerable psychological processes in which internal mediating events must occur before external stimuli will exercise control over overt performances. *Verbal mediators*, in the form of self-instructions, implicit categorizing responses, or linkages through common word associates, are perhaps the most prevalent symbolic regulators of behavior. Persons must often rely on verbal self-control when external stimuli for correct responses are absent (Bern, 1967; Luria, 1961). Also, in many forms of conceptual behavior or in semantic generalization persons display a common response to highly dissimilar stimuli (e.g., artichokes, strawberries, lobsters, onion soup, leg of lamb, rye bread, wine,

and chocolate soufflé). Performance under these conditions is governed by a mediating rule or a common verbally labeled attribute (healthful edibles) rather than by the physical characteristics of the external stimuli alone (Bourne, 1966). In a nonmediational account of conceptual behavior, Ferster (1968) equates conceptualization with abstract stimulus control whereby, through selective reinforcement, a common property of diverse complex stimuli comes to control the response. The view is advanced that “the term *abstract stimulus control* is somewhat preferable to *concept formation* because it emphasizes the controlling properties of the stimulus rather than an inner and unreachable process [p. 404].” The limitations of this type of approach become readily apparent in cases, such as the one cited above, where different stimuli have no physical property in common but must be categorized on the basis of

a symbolically labeled attribute.

In most higher-level functioning, the implicit rules regulating behavior cannot be defined solely in terms of stimulus properties or combinations of stimulus elements. In an experiment conducted by Sassenrath (1962), for example, students were presented with a series of words of various lengths, to which they were required to respond with correct numbers that could be consistently produced only by recourse to a complicated but unspecified code. The principle upon which reinforcement was administered consisted of 11 minus the number of letters in the stimulus word, so that correct responding had to be determined by symbolic transformations of external stimuli. Subjects eventually made accurate symbolic transformations, which then became inner stimuli for accurate responsiveness. The process of self-reinforcement, in which persons self-administer

rewarding or punishing consequences on the basis of implicit standards of conduct, is another phenomenon involving internal rule-regulated behavior.

Behavior may also be governed to some extent by *imagined mediators* which represent previously observed behavioral events and environmental situations. It is exceedingly difficult to think about the actions of people in given settings or features of one's physical environment without experiencing corresponding visual imagery. The highly influential role of symbolic processes in behavioral change is most evident in vicarious or observational learning (Bandura, 1965). The paradigm utilized to study this phenomenon involves a nonresponse acquisition procedure in which a person merely observes a model's behavior but otherwise exhibits no overt instrumental responses; nor is any reinforcing

stimuli administered during the acquisition period. Exposure to modeling influences is an exceedingly effective means of transmitting and modifying conceptual and social behavior. Since in this mode of response acquisition observers can acquire only perceptual and other implicit responses resembling the modeled patterns while they are occurring, imaginal and verbal mediators that govern subsequent response retrieval and reproduction clearly play a prominent role in observational learning.

There is a growing body of evidence (Bower, 1969; Paivio, 1969) that imaginal processes serve a mediating function in facilitating verbal associative learning. In these studies, imaginal mediators are manipulated experimentally by instructing subjects to link the members of each pair of stimulus and response terms with a distinctive image, and by using stimulus items that



vary in their capacity to evoke vivid imagery. The findings demonstrate that during paired presentations subjects code stimulus and response events into mental images for memory representation; later, the stimuli serve as cues that reinstate the compound image from which the response component is decoded to its original verbal form. Imaginally mediated associative learning is far superior to that in which this type of representational process is minimally operative.

Some evidence exists to suggest that *arousal mediators* may also exercise a regulatory function over emotional behavior. According to the dual process theory of avoidance behavior, stimuli acquire, through their temporal conjunction with aversive experiences, the capacity to produce arousal reactions which have both central and autonomic components. It is further assumed that instrumental avoidance responses become partly

conditioned to arousal-correlated stimuli. The most direct evidence that arousal mediators operating primarily at the central level exercise discriminative control over avoidance behavior is provided by Solomon & Turner (1962). Animals first learned to make an avoidance response to a light stimulus. They were then skeletally immobilized by curare to prevent avoidance responses from being conditioned directly to external stimuli; shock was paired with one tone, while a contrasting tone was never associated with aversive stimulation. In subsequent tests the animals displayed essentially the same degree of avoidance in response to the negatively valenced tone and the light, both of which evoked common arousal reactions, whereas avoidance responses rarely occurred to the neutral tone. Considering that the light and the tones were never associated, and assuming that the curare blocked all skeletal

activity (Black, 1967), thus precluding any differential conditioning of avoidance responses to the tones, the controlling power of the negatively valenced auditory stimulus must be mediated through either events in the central nervous system or autonomic feedback mechanisms.

Further demonstrations of internal regulation of behavior are furnished by studies (Bailey, 1955; Bailey & Porter, 1955; Levine, 1953), in which infrahuman subjects must learn to respond differentially on the basis of internal stimulation associated with different drive states like thirst or hunger because the environment contains no distinguishable guiding cues. Under these conditions the differential cues provided by internal drive states, or even different intensities of the same drive, give rise to dissimilar patterns of behavior. These findings are consistent with those cited earlier in which internal stimuli are

endowed with controlling properties through interoceptive conditioning.

The powerful internal control of behavior is most vividly illustrated in grossly deviant behavior for which the controlling contingencies are almost entirely symbolically generated. The passage quoted below (Bateson, 1961), was taken from a patient's account of his psychosis long before it was fashionable to write about one's psychiatric experiences. The narrator had received a scrupulously moralistic upbringing according to which even most socially approved patterns of behavior were considered deviant, sinful, and likely to provoke the wrath of God; consequently many innocuous acts, such as accepting medication, elicited dreadful apprehensions, which, in turn, motivated and maintained exceedingly painful atonement rituals designed to forestall the imagined disastrous consequences.

In the night I awoke under the most dreadful impressions, I heard a voice addressing me, and I was made to imagine that my disobedience to the faith, in taking the medicine overnight, had not only offended the Lord, but had rendered the work of my salvation extremely difficult, by its effect upon my spirits and humours. I heard that I could only be saved now by being changed into a spiritual body...A spirit came upon me and prepared to guide me in my actions. I was lying on my back, and the spirit seemed to light on my pillow by my right ear, and to command my body. I was placed in a fatiguing attitude, resting on my feet, my knees drawn up and on my head, and made to swing my body from side to side without ceasing. In the meantime, I heard voices without and within me, and sounds as of the clanking of iron, and the breathing of great forge bellows, and the force of flames. I understood that I was only saved by the mercy of Jesus, from seeing, as well as hearing, hell around me, and that if I were not obedient to His spirit, I should inevitably awake in hell before the morning. After some time I had a little rest, and then, actuated by the same spirit, I took a like position on the

floor, where I remained, until I understood that the work of the Lord was perfected, and that now my salvation was secured; at the same time the guidance of the spirit left me, and I became in doubt what next I was to do. I understood that this provoked the Lord, as if I was affecting ignorance when I knew what I was to do, and, after some hesitation, I heard the command, to *“Take your position on the floor again then,”* but I had no guidance or no perfect guidance to do so, and could not resume it. I was told, however, that my salvation depended upon my maintaining that position as well as I could until the morning; and oh! great was my joy when I perceived the first brightness of the dawn, which I could scarcely believe had arrived so early [pp. 28-29],

The above quotation provides a clear example of how behavior can come under the complete control of fictional contingencies and fantasied reinforcements powerful enough to override the influence of the reinforcement contingencies existing within the social environment. Thus the

acceptance of medicine, an act that was later considered a rebellion against, and the mistrust of, the Almighty, generated extremely aversive hallucinations of hellish torture, the cessation of which was contingent upon the performance of arduous bizarre behavior. The nonoccurrence of subjectively experienced, but objectively nonexistent threats, undoubtedly serves as an important mechanism maintaining many other types of psychotic behavior. Given the conjunction of fictional contingencies and a powerful internal reinforcing system, a person's behavior is likely to remain under very poor environmental control even in the face of severe externally administered punishments and blatant disconfirming experiences.

When I opened the door, I found a stout man servant on the landing, who told me that he was placed there to forbid my going out, by the orders of Dr. P. and my friend; on my

remonstrating, he followed me into my room and stood before the door. I insisted on going out; he, on preventing me. I warned him of the danger he incurred in opposing the will of the Holy Spirit, I prayed him to let me pass, or otherwise an evil would befall him, for that I was a prophet of the Lord. He was not a whit shaken by my address, so, after again and again adjuring him, by the desire of the Spirit whose word I heard, I seized one of his arms, desiring to wither it; my words were idle, no effect followed, and I was ashamed and astonished.

Then, thought I, I have been made a fool of! But I did not on that account mistrust the doctrines by which I had been exposed to this error. The doctrines, thought I, are true; but I am mocked at by the Almighty for my disobedience to them, and at the same time, I have the guilt and the grief, of bringing discredit upon the truth, by my obedience to a spirit of mockery, or, by my disobedience to the Holy Spirit; for there were not wanting voices to suggest to me, that the reason why the miracle had failed, was, that I had not waited for the Spirit to guide my action when the word was spoken and that I had seized



the man's arm with the wrong hand...[p. 33],

The voices informed me, that my conduct was owing to a spirit of mockery and blasphemy having possession of me...that I must, in the power of the Holy Spirit, *redeem myself*, and rid myself of the spirits of blasphemy and mockery that had taken possession of me.

The way in which I was tempted to do this was by throwing myself on the top of my head backwards, and so resting on the top of my head and on my feet alone, to turn from one side to the other until I had broken my neck. I suppose by this time I was already in a state of feverish delirium, but my good sense and prudence still refused to undertake this strange action. I was then accused of faithlessness and cowardice, of fearing man more than God.

I attempted the command, the servant prevented me. I lay down contented to have proved myself willing to obey in spite of his presence, but now I was accused of not daring to wrestle with him unto blows. I again attempted what I was enjoined. The man seized me, I tore myself from him,

telling him it was necessary for my salvation; he left me and went down stairs. I then tried to perform what I had begun; but now I found, either that I could not so jerk myself round on my head, or that my fear of breaking my neck was really too strong for my faith. In that case I then certainly mocked, for my efforts were not sincere.

Failing in my attempts, I was directed to expectorate violently, in order to get rid of my two formidable enemies; and then again I was told to drink water, and the Almighty was satisfied; but that I was not satisfied (neither could I be sincerely, for I knew that I had not fulfilled his commands), I was to take up my position again; I did so, my attendant came up with an assistant and they forced me into a straight waistcoat. Even then I again tried to resume the position to which I was again challenged. They then tied my legs to the bed-posts, and so secured me [pp. 34-35].

The process of behavioral change will be conceptualized quite differently depending upon whether one assumes that responses are regulated

predominantly by external stimulus events or partly by mediating symbolic events. In nonmediational interpretations, learning is depicted as a more or less automatic process wherein stimuli become associated with overt responses through differential reinforcement. By contrast, in mediational formulations the learner plays a far more active role and his responsiveness is subject to extensive cognitive determination. On the basis of salience of environmental events and past learning experiences persons select the stimuli to which they will respond; environmental events are coded and organized for representation in memory; provisional hypotheses regarding the principles governing the occurrence of reinforcement are derived from differential consequences accompanying overt behavior; and after a given implicit hypothesis has been adequately confirmed by successful corresponding

actions, the mediating rules or principles serve to guide the performance of appropriate responses on future occasions. Relevant empirical evidence bearing on these two theoretical approaches will be reviewed in the concluding chapter of this book.

It has been customary in psychological theorizing to construct entire explanatory schemes around a single form of behavioral control, to the relative neglect of other obviously influential variables and processes. Thus, for example, some psychologists have tended to concentrate upon stimulus control effected principally through classical-conditioning operations; Skinnerians have primarily focused upon external reinforcement control of behavior; and researchers favoring cognitive interpretations have been most preoccupied with mediational processes. These resolute allegiances to partial

processes are typically accompanied by some disdain for variables patronized by out-group theorists. A comprehensive theory of human behavior must encompass all three sources of behavioral regulation, i.e., stimulus control, internal symbolic control, and outcome control. In many situations, of course, two or more of these processes may operate simultaneously in governing responsiveness.

### **Social Learning as a Reciprocal Influence Process**

Psychodynamic theories of personality typically depict the deviant actions of individuals as being impelled by powerful internal forces that they not only are unable to control, but whose existence they do not even recognize. On the other hand, behavioral formulations often characterize response patterns as depending on environmental contingencies. The environment is presented as a

more or less fixed property that impinges upon individuals and to which their behavior eventually adapts. Neither view of man is particularly heartening nor entirely accurate.

Psychological functioning, in fact, involves a continuous reciprocal interaction between behavior and its controlling conditions. Although actions are regulated by their consequences, the controlling environment is, in turn, often significantly altered by the behavior. Examples of the way in which behavior shapes the environment can be found even in simple experiments with infrahuman subjects. As a means of studying the acquisition of avoidance responses, Sidman (1960, 1966) devised a paradigm in which animals could postpone the occurrence of aversive shocks by depressing a lever. Under these conditions some animals created for themselves an essentially punishment-free environment,

whereas others who, for one reason or another, were slow in acquiring the requisite coping response produced a highly aversive milieu. When response changes are selected as the data for analysis, as is almost invariably the case, then the environmental contingencies appear to be fixed, controlling conditions; if, instead, one analyzed the data for the amount of aversive stimulation created by each subject, then the environment becomes the change worthy event that may vary considerably for different subjects and at different times for the same subject. Within the framework of environmental analysis, one might, for instance, administer alcohol to one group of subjects in the Sidman paradigm and water to another, and then compare the types of aversive environments produced under intoxicated and sober conditions.

Interpersonal situations, of course, provide much greater latitude for determining the

contingencies that maintain one's behavior. In social interchanges the behavior of one person exerts some degree of control over the actions of others. To take an example, counterreactions drawn by hostile responses are likely to be quite different from those elicited by friendly ones. Experimental analysis by Rausch (1965) of sequential interchanges between children, in fact, reveals that the immediately preceding stimulus act on the part of one person was the major determinant of the other person's response. In approximately 75 percent of the instances, hostile behavior elicited unfriendly responses, whereas cordial antecedent acts seldom did. Aggressive children thus created through their actions a hostile environment, whereas children who displayed friendly interpersonal modes of response generated an amicable social milieu. These findings demonstrate that persons, far from



being ruled by an imposing environment, play an active role in constructing their own reinforcement contingencies through their characteristic modes of response. The theory of social interaction advanced by Thibaut & Kelley (1959) relies heavily upon mutual reinforcement contingencies. Research stimulated by this conceptualization provides numerous demonstrations of how outcomes in dyadic interchanges are jointly determined by the behavior of both participants.

It might be argued that if each person partly creates his own environment then there is no one remaining to be influenced. This apparent paradox overlooks the fact that reciprocity is rarely perfect, since one's behavior is not the sole determinant of subsequent events. Furthermore, controlling and controllable events usually occur in an alternating pattern rather than concurrently until the

interaction sequence is terminated. The reciprocal reinforcement process involved in the unwitting production and strengthening of tantrum behavior in children will serve to illustrate the latter point. On most occasions children's mild requests go unheeded because the parent is preoccupied with other activities. If subsequent bids also go unrewarded the child will generally display progressively more intense forms of behavior which become increasingly aversive to the parent. At this point in the interaction sequence the child is exercising aversive control over the parent. Eventually the parent is forced to terminate the troublesome behavior by attending to the child, thereby reinforcing obstreperous responsiveness. Such differential reinforcement practices are highly effective in producing aversive forms of behavior of unusual resiliency. Some of the most vivid examples of pernicious reciprocal control are

provided in Levy's (1943) classic study of childhood overdependency:

Patient (4 years, 9 months) rules the household by his screaming and imperative voice. Mother will always comply with his demands rather than hear him scream....The patient is disobedient, hyperactive, impudent to the parents; calls them names, kicks and scratches when not given his own way... [pp. 361-363].

In complete command, dominating mother and sister, who yielded in every instance rather than endure his scenes, a fourteen-year-old refused to go to school. He lay in bed, ordered his sister to get his breakfast, bring his clothes, and struck her when she disobeyed [p. 163],...

Mother states that he (10-year-old) was spoiled by herself and maternal grandmother, and later she gave in to his demands for the sake of peace...Whenever refused, he always commanded obedience by screaming [pp. 383-384]...After screaming no longer availed, he used the method of nagging, monotonously repeating his

demands [p. 163],

The above case material illustrates how certain reinforcement practices generate particular behavior, which, due to its aversive properties, in turn creates the very conditions likely to perpetuate it. Thus while nature's programming ensured that people's distress would not go unheeded for long, it also provided the basis for the establishment of socially disturbing response patterns. Interpersonal difficulties are most likely to arise under conditions where a person has developed a narrow range of social responses which periodically force reinforcing actions from others through aversive control (e.g., nagging complaints, aggressive behavior, helplessness, sick-role behavior, and emotional expressions of rejection, suffering, and distress, and other modes of responding that command attention). The treatment strategies are quite different depending

upon whether one views such behavior in terms of its functional value in controlling the responsiveness of others or as by-products of intrapsychic disturbances. Deleterious reciprocal processes can be best eliminated by withdrawing the reinforcement supporting the deviant behavior and by hastening the development of more constructive means of securing desired reactions from others.

It is only because there is some degree of self-determination of outcomes that treatment of an individual is justifiable. To the extent that newly established patterns of behavior create favorable reciprocally reinforcing processes, they will be effectively sustained over time. However, in instances where one person's behavior exerts little or no control over the actions of others, perhaps from disparities in status or power, it may become necessary to effect changes in other people

important to him, or in the social system itself.

## **Symptom Substitution**

It is generally assumed by therapists who subscribe to psychodynamic models that direct modification of deviant behavior is likely to result in “symptom substitution.” This issue, like others pertaining to the development and treatment of behavioral dysfunctions, has become hopelessly muddled by the use of an inappropriate conceptual scheme which thoroughly obscures the very phenomena it is designed to elucidate. It is further obfuscated by partisan claims that no such phenomena exist (Yates, 1958), and counterclaims that symptom substitution not only occurs, but that the commuted forms may endanger the very life of ill-fated clients (Bookbinder, 1962). Relevant outcome data cited later lead one to suspect that prognostications of dire

consequences are intended more to dissuade therapeutic innovation than to protect clients welfare. Indeed, as Grossberg (1964) has noted, much more serious from a humanitarian standpoint is the failure of “depth” psychotherapies to effect significant changes in behavioral conditions that produce chronic suffering and disheartening social and vocational incapacitation.

The dispute about symptom substitution does involve an important psychological phenomenon, but little headway will be made in resolving this issue as long as it is misconstrued as one of symptomatic versus non- symptomatic treatment, or modification of causal versus behavioral events. Even if the concepts of symptom and mental disease were pertinent to behavioral dysfunctions, which they are not, the symptom substitution hypothesis could never be satisfactorily tested

because it fails to specify precisely what constitutes a “symptom,” when the substitution should occur, the social conditions under which it is most likely to arise, and the form that the substitute symptom will take. If consensus could ever be attained in devising an exhaustive list of possible symptomatic behaviors, one would be forced, in order to prove definitively that symptom substitution does not occur, to conduct thorough and repeated assessments of clients’ behavior for an indefinite period. This exhaustive toil would still be all for naught, since there exist no reliable criteria for determining whether the occurrence of so-called symptomatic behaviors after completion of treatment represents emergent substitute by-products of a psychic pathology, the development of new modes of maladaptive response to environmental pressures, or the persistence of old modes of maladaptive behavior which had gone



unnoticed until even worse behavior was eliminated.

The symptom substitution issue would never have been cast in its present misleading form had it been recognized that one cannot eliminate behavior as such, except perhaps through direct removal of requisite neurophysiological systems. Response patterns can be modified only by altering the stimulus conditions that regulate their occurrence. Hence, all forms of psychotherapy, regardless of their self-conferred honorific titles and virtuous aims, effect behavioral changes through either deliberate or unwitting manipulation of controlling variables.

Psychodynamic and social-learning approaches to psychotherapy are, therefore, equally concerned with modifying the “underlying” determinants of deviant response

patterns; however, these theories differ, often radically, in what they regard these “causes” to be, a crucial difference which in turn influences the types of stimulus conditions favored in the respective treatments. To take a simple but telling example, in an effort to gain a better understanding of some of the factors governing deviant behavior likely to be labeled “symptomatic,” Ayllon, Haughton, & Hughes (1965) induced and sustained for a time a bizarre broom-carrying response in an adult schizophrenic by periodic positive reinforcement of the behavior. A psychotherapist, who was unaware of the conditions which had established and maintained this response pattern, invoked the following underlying causes:

Her constant and compulsive pacing, holding a broom in the manner she does, could be seen as a ritualistic procedure, a magical action....Her broom would be then: (1) a

child that gives her love and she gives him in return her devotion, (2) a phallic symbol, (3) the sceptre of an omnipotent queen...this is a magical procedure in which the patient carries out her wishes, expressed in a way that is far beyond our solid, rational and conventional way of thinking and acting [p. 3],

In treating the persistent display of bizarre and apparently purposeless behavior this therapist, on the basis of his causal explanation, would subject the woman to extended interpretive probing of her sexual conflicts and delusions of omnipotence. On the other hand, the behavioral therapist, viewing the rewarding outcomes as the major determinant of the so-called psychotic symptom, would alter the reinforcement contingency governing the behavior. Indeed, when the occasional rewards for carrying a broom were completely withdrawn the "symptom" promptly vanished and, according to a two-year follow-up

study, never reappeared.

In light of the above considerations, it would be both more accurate and advantageous to redefine the causal versus symptomatic treatment controversy as being primarily concerned with the question of whether a particular form of therapy chooses to modify conditions that, in actuality, exercise *strong* or *weak* or *no significant control* over the behavior in question.

According to the social-learning point of view, in the course of social development a person acquires different modes of coping with environmental stresses and demands. These various response strategies form a hierarchy ordered by their probability of effecting favorable outcomes in certain situations. A particular mode of responding may occupy a dominant position in various hierarchies; subordinate strategies may

differ from one situation to another and may vary widely in their frequency of occurrence relative both to the dominant response tendencies and among themselves. Consequently the effects of removing a dominant response pattern will depend upon the number of different areas of functioning in which it is characteristically activated, and the nature and relative strength of the initially weaker response dispositions.

One can distinguish several different types of treatment approaches that are likely to produce small, unpredictable, or unenduring changes in deviant behavior suggestive of “symptom substitution.” A treatment that fails to alter the major controlling conditions of the deviant behavior will most certainly prove ineffective. Similarly, a poorly designed program of therapy aimed solely at eliminating maladaptive behavior patterns does not in itself guarantee that desired

modes of behavior will ensue. This is particularly true when removal of deviant behavior is brought about through withdrawal of its usual positive consequences or by punishment or the imposition of external restraints.

In extinction treatment, as dominant response tendencies are eliminated through nonreward, the person will revert to alternative courses of action, which have proved of some value in the past. If these initially weaker forms are nondeviant and are adequately reinforced, then deviant patterns are likely to be abandoned in favor of the competing alternatives without the emergence of any negative characteristics. If, on the other hand, the subordinate set of responses in the client's repertoire is for the most part unsatisfactory, the therapist will be faced with the task of eliminating a long succession of ineffective patterns of response.

Response substitution is also likely to occur when deviant behavior is eliminated not by removal of its maintaining conditions but by superimposing a competing set of controlling variables (Bandura, 1962). Thus, for example, antisocial behavior that serves as an effective means of securing positive reinforcement may be temporarily suppressed through severe punishment. However, if the offender has learned relatively few prosocial modes of behavior, elimination of one deviant pattern will probably be followed by another set of deviant responses that are more successful in avoiding detection and subsequent punishments. Moreover, the suppressed behavior is likely to reappear in situations where the probability of detection is low, or the threat of punishment is weaker.

Successive substitution of deviant behavior likewise readily arises under conditions where

defensive responses are either punished or physically restrained without neutralizing the aversive properties of subjectively threatening situations. This process is well illustrated in Miller's (1948) classic study of avoidance behavior. Animals were administered shocks in a white compartment of a shuttle box and learned to escape the painful stimulation by running through an open door into a black compartment. The formerly neutral white cues rapidly acquired aversive properties, and the animals continued to perform the avoidant running responses even though the shock stimulation had been completely discontinued. The animals were then placed in the white compartment with the door closed to block the running behavior. However, the door could be released by rotating a wheel. Wheel-turning was rapidly learned and maintained by fear reduction. When conditions were further changed so that



wheel-turning no longer released the door, but the animal could escape from the threatening compartment by pressing a bar, the former response was quickly discarded while the latter became strongly established. Thus interventions that eliminated avoidance responses without reducing the arousal potential of conditioned aversive stimuli merely produced new forms of defensive behavior.

The preceding discussion has focused on approaches which, if used as the sole method of treatment, may eliminate one form of deviant behavior but lead to a different one. The problem of deviant response substitution, however, can be easily forestalled by including in the original treatment program procedures that effectively remove the reinforcing conditions which sustain deviant behavior and concurrently foster desirable alternative modes of behavior. Such

treatment strategies, which will be fully reviewed in succeeding chapters, not only produce enduring changes in the selected direction, but may also set in motion beneficial changes in related areas of psychological functioning.

### **Efficacy of Conventional Methods of Behavioral Change**

A casual survey of contemporary methods of behavioral change would disclose a multiplicity of “schools” of approaches, each claiming respectable improvement rates for their particular clientele. A closer examination of these treatment approaches, however, reveals that the apparently multifarious systems represent essentially a single procedure: they all utilize a social relationship and place heavy reliance upon verbal interpretive methods for inducing changes in social behavior. Moreover, only a small range of persons exhibiting behavioral deviations are actually treated, with

varying degrees of success, by interpretive methods.

In the first place, most antisocial personalities, who constitute a sizable proportion of the deviant population, simply “serve time” in penal institutions or remain under legal surveillance. Since such persons generally prove unresponsive to traditional techniques, many psychotherapists have become pessimistic about the value of psychotherapy for modifying “psychopathic” or antisocially deviant behavior. In the case of younger delinquents, correctional institutions, though often providing a more structured and nonpunitive environment than the children have formerly experienced, rarely offer systematic programs that are efficacious in producing enduring behavioral and attitudinal changes. Similarly, most persons exhibiting gross behavioral dysfunctions, who also derive

relatively little benefit from conventional interview approaches, are provided mainly with medication, “occupational therapy” in the form of carrying out institutional routines, recreational activities and custodial care in “mental” institutions, where they become intermittent or permanent residents. Indeed, the least socially responsive psychotics are customarily assigned to essentially custodial wards where they receive only medication and where they mutually extinguish one another’s limited social behaviors. Nor have conventional methods of behavioral change had much beneficial impact upon the widespread problems of alcoholism, drug addiction, and a host of other major social problems which, in some instances, require modification of social systems rather than the behavior of isolated individuals.

Even in the restricted sample of persons who

consult psychotherapists and are accepted for treatment, the dropout rates and the estimates of behavioral change for those who remain in treatment give little cause for complacency. Between 30 and 60 percent of this highly selected group (diagnosed predominantly as neurotic and excluding grossly psychotic, alcoholic, antisocial, and neurologically involved cases), terminate treatment against the advice of their therapists after several initial interviews (Frank, Gliedman, Imber, Nash, & Stone, 1957; Garfield & Kurz, 1952; Imber, Nash, & Stone, 1955; Kirtner & Cartwright, 1958; Knight, 1941; Kurland, 1956; Mensh & Golden, 1951; Rickles, Klein, & Bassan, 1950). Of those clients who continue in the therapy programs, irrespective of the type of treatment administered, approximately two-thirds are usually rated as exhibiting some degree of improvement (Appel, Lhamon, Myers, & Harvey,

1951; Eysenck, 1952; Frank et al., 1957; Kirtner & Cartwright, 1958; Zubin, 1953). Although the above figures are based on studies of adults, there is little reason to believe that the picture is very different in the case of children (Levitt, 1963).

### *CRITERIA OF CHANGE*

The two-thirds improved figure, which has been widely and uncritically accepted as the typical base rate of change accompanying interview therapies, overestimates the amount of benefit that people actually derive from such treatment. The criteria upon which judgments of therapeutic efficacy are usually based leave much to be desired. In many instances psychotherapists' global impressions of their results serve as the major indicants of outcome. Considering that such ratings reflect upon therapists' professional competence, it is reasonable to assume that

therapists do not underrate the therapeutic value of their methods.

Projective tests and personality questionnaires have also been extensively employed as the principal measures for evaluating psychotherapy. Their widespread popularity is probably more attributable to their availability and ease of administration and scoring than to their direct relevance to types of psychological changes that clients hope to achieve by undergoing psychotherapy. If the proverbial Martian were to review the therapy outcome literature he would undoubtedly conclude that earth men embark upon expensive and time-consuming programs of treatment to effect modifications in their Rorschach, TAT, or MMPI responses, rather than to overcome behavioral inhibitions, to resolve chronic interpersonal problems, to gain control over alcoholism, or otherwise to enhance their

level of social functioning. Since the behavioral correlates of these personality test measures are considerably in doubt (Mischel, 1968), evidence that test responses have changed is of limited value in judging the relative success of given approaches to treatment. This is particularly true in view of the fact that responses to personality tests are readily amenable to response-set biases, to implicit expectations inherent in the setting, and to other extraneous influences.

A third course for the evaluation of psychotherapeutic efficacy, in vogue for a long time, focuses on changes in clients' verbal behavior in interview situations. Dedicated researchers have devoted literally thousands of arduous hours to counting the frequency of clients' self-reference statements, affective verbalizations, resistive comments, self-exploratory remarks, type-token ratios, and a host



of other verbal contents. Although this approach yields readily quantifiable data that possess some face validity, there is little evidence that changes observed in clients' verbal behavior influence appreciably their daily interpersonal responsiveness. These verbal indices are, therefore, more pertinent to evaluating verbal conditioning than fundamental behavioral change processes.

Inasmuch as persons typically seek the help of psychotherapists in order to modify faulty interpersonal modes of responding and the adverse consequences these engender, it is remarkable that until recently behavioral changes as a measure of success had not only been seriously neglected, but often derogated as superficial. Indeed, there exists no other avowedly humanitarian enterprise in which clients' major concerns are so cavalierly disregarded. Whatever

personality changes a psychotherapist may choose to promote, they should be considered of dubious value if they are not reflected in the client's social behavior. To take an analogous example, medical treatments that, on the basis of physicians' impressions and other ambiguous indicants, supposedly effected profound physiological changes but, in actuality, produced no evident changes in clients' suffering and physical dysfunctions, would be summarily dismissed as both ineffectual and misleading. Clearly, objective measures of changes in behavior constitute the most stringent and the most important criteria of the power of a given treatment method. Since the areas of functioning that require modification may differ extensively from person to person, global, all-purpose measures of change must be replaced by behavioral criteria that are specific and individually tailored to the treatment objectives

selected by the client (Pascal & Zax, 1956). Findings of comparative studies utilizing indices of improvement based on behavioral change (Fairweather, 1964; Lazarus, 1961; Paul, 1966) yield success rates that are substantially below the legendary two-thirds improved figure customarily quoted for interview therapies.

Moreover, improvement figures usually present a misleading picture of the effectiveness of interview methods because dropouts have been invariably excluded from statistical analyses. When a particular procedure yields a relatively high attrition rate, discarding terminators in assessing psychotherapy becomes especially critical. Let us assume, for instance, that of 100 persons who entered treatment, 80 withdrew after several initial interviews, while all of the remaining 20 cases exhibited significant improvement. If terminators are ignored the

treatment proves to be 100 percent effective when, in fact, only 20 percent of the cases have been benefited. It will be recalled that a sizable percentage of clients who enter into interview treatments terminate after a few visits.

#### *IMPROVEMENT RATES FOR NONTREATED CASES*

In order to demonstrate that psychotherapy is a condition that contributes to observed outcomes, it is necessary to compare changes exhibited by clients who have undergone treatment with those of a comparable group of nontreated cases. Such a comparison group is essential in order to provide an estimate of the influence of concomitant extratherapeutic experiences that may contribute importantly to demonstrable changes in clients' behavior. Assuming that the two groups are reasonably well matched on relevant variables, any differential change between treated and

nontreated cases can thus be regarded as therapeutically induced. There are relatively few studies of psychotherapeutic outcomes that meet the minimum requirements of an adequate control group and clear specification and objective measurement of outcomes.

Bergin (1966) has reviewed findings of seven studies (that met the minimal requirements of a two-group design and some measures of change) in which outcomes from a treated group and a comparable nontreated group of clients were compared. All seven studies, involving diverse forms of therapy and diverse criteria, show that persons who have undergone psychotherapy do not differ significantly in average amount of change from nontreated controls, but treatment generally produces more variable effects. Whereas controls do not change or improve to some extent, those who have received treatment either remain

unchanged, benefit somewhat, attain considerable improvement, or become worse. Lest these variance differences temporarily revive interest in weak behavioral change methods, it should be noted that treatment-induced effects are less favorable and, hence, less variable when more stringent and socially meaningful measures are employed. This is well illustrated by results of an investigation conducted by Rogers (1967) and his collaborators on the efficacy of client-centered therapy.

Schizophrenics were administered a battery of tests including the Rorschach, MMPI, Thematic Apperception Test, Wechsler Intelligence Scale, Anxiety Reaction Scales, Stroop Tests, F Authoritarian Scale, Q-Sort, and Wittenborn Psychiatric Rating Scales. One group of schizophrenics participated in intensive client-centered treatment with highly qualified

therapists, whereas matched controls received no therapy. After completion of the treatment phase the test battery was readministered and two clinical psychologists made global judgments, principally from the Rorschach and the MMPI, of the degree of change in patients' levels of psychological functioning. Treated and nontreated groups did not differ in mean improvement, although some of the patients who received treatment, unlike the controls, showed somewhat larger gains while others displayed a change for the worse. In an effort to account for this variability, therapists' behavior was rated from tape-recorded samples of their interviews for positive regard, empathy, and genuineness. Except for scores on one scale of the MMPI test, patients receiving high levels of the supposedly therapeutic conditions did not differ significantly from patients whose therapists displayed low positive

responsiveness or from nontreated controls in self-concepts, intellectual functioning, ratings of their behavior on the hospital ward, and global assessments based on various personality tests. It would seem from the overall pattern of results that a hospitalized patient has little to gain from undergoing client- centered treatment and may, in fact, suffer some slight losses if his therapist happens to be lacking in amiability.

Faced with growing evidence that interview therapies have limited efficacy, some researchers concluded that outcome studies should be held in abeyance while intensified efforts are made to elucidate the process underlying these procedures. Outcome studies were therefore promptly downgraded, investigators became absorbed in minute analyses of verbal interchanges between therapists and their clients and, in the absence of any promising alternatives,



the traditional practices not only survived essentially unaltered but were professionally sanctified. The possibility that a conversational approach to the modification of deviant behavior is inherently too weak to justify exhaustive process studies was rarely entertained. Under conditions where a given treatment procedure exercises weak behavioral control many other extraneous variables (e.g., personality characteristics of therapists, social attributes of clients, minor technical variations in procedures) singly or in combination will emerge as determinants of change. Rather than pursue these limiting factors, it would be far more profitable to devise new methods that are sufficiently powerful to override their influences. If similar errors in research strategy are to be avoided in the development of new treatment approaches it is essential to establish the relative superiority of a

particular approach before undertaking intricate process studies that might elucidate underlying mechanisms or suggest further procedural refinements. It is also necessary to select stringent and unambiguous criteria of change so as to establish precisely what a given treatment method can or cannot accomplish.

*Multiprocesses Governing Behavioral Changes.*

Evaluation of psychological procedures is often unnecessarily obscured by the use of concepts such as “cure,” “spontaneous remission,” and “relapse,” which may be appropriate in describing the course of physical disease processes but are misleading when applied to behavioral changes that are governed by social variables. In the latter case, the pertinent issues of concern are whether a given set of conditions can successfully *induce* a change in behavior, whether the established changes *generalize* to extratherapeutic situations,

and whether the changes are *maintained* over time. Since these phenomena are fundamentally different from disease processes they require a separate and more fitting conceptual scheme. Thus if a primary malignant tumor has been surgically removed, it is reasonable to speak of cures and of possible relapses, since cancerous cells may not have been completely extirpated. By contrast, deviant behavior cannot be eradicated by the removal of a global internal determinant; rather, the occurrence of deviant behavior is extensively controlled by its likely consequences, and may therefore vary considerably in different environmental settings, toward different persons, and at different times. This would be analogous to having malignancies appear in a given person under one set of social circumstances and disappear under others.

Unlike physical therapies, in the appraisal of

psychological methods it is important to distinguish among the induction, generalization and maintenance of behavior, because these processes are governed by somewhat different variables. The fact that established changes may no longer be evident some time after treatment has been discontinued does not necessarily mean that the method is inadequate. On the contrary, it may be exceedingly powerful for inducing changes, but the gains may prove short-lived because the proper maintaining conditions have not been arranged. Similarly, in some cases enduring behavioral changes are achieved, but they do not transfer to extratherapeutic situations, thus requiring supplementary procedures to ensure optimal transfer effects. Outcome studies should therefore be designed to provide unconfounded data regarding the magnitude, generality, and durability of outcomes associated

with given treatment approaches.

### *PSYCHOTHERAPY AND FRIENDSHIP EXPERIENCES*

It would appear from the absence of differential improvement rates for treated and nontreated groups that favorable behavioral changes, when they do occur, must be produced by factors that are unrelated to the special methods that are rigorously applied by psychotherapists. It is therefore not surprising to find that intensive specialized training and experience in traditional psychotherapeutic procedures may not only fail to increase the incidence of favorable outcomes but may in some instances interfere with the establishment of social-learning conditions likely to foster beneficial changes. Poser (1966), in a bold research project, compared modifications in the psychological functioning of psychotic patients who received either five months of group

psychotherapy by psychiatrists and psychiatric social workers, group discussions with undergraduate students, or no special treatment. The undergraduates, who responded to an advertisement for summer employment, were selected without any additional requisites, they had no training or experience in psychotherapy, and they were given no suggestion as to how they should conduct their sessions. Patients seen by the undergraduates displayed greater gains than both the controls or cases treated by professional psychotherapists; the latter two groups did not differ much from each other. Rioch and her associates (Rioch, Elkes, Flint, Usdansky, Newman, & Silber, 1963) likewise found that selected married women who received part-time practical training over a two-year period in the application of psychotherapeutic methods performed as well as their professional counterparts. However, in

view of Poser's findings, it would be essential to study the comparative efficacy of a group of untrained therapists in order to determine whether the protracted instruction was irrelevant to the outcomes achieved by the trained housewives.

The question nevertheless remains why some persons undergo changes and others do not, whether or not they are involved in formal therapy. Comparative investigations of the attributes of clients who terminate treatment prematurely with those of clients who remain and improve are particularly relevant in this respect. Relative to persons who continue in treatment, terminators typically come from lower socioeconomic levels, are nonconforming toward authority figures, are impulsive, relatively non-anxious, report a history of antisocial behavior, present deficits in verbal and emotional

responsiveness, exhibit a relative inability to establish and to maintain social relationships, and acknowledge little contingency between their own behavior and the actions of others toward them. By contrast, remainers generally come from higher socioeconomic levels, are better educated, are willing to explore their personal problems, are responsive to social reinforcement, are suggestible, introspective, relatively anxious, self-dissatisfied, and self-condemning (Auld & Myers, 1954; Frank et al. 1957; Hiler, 1954; Imber et al., 1955; Katz, Lorr, & Rubinstein, 1958; Lorr, Katz, & Rubinstein, 1958; McNair, Lorr, & Callahan, 1963; Rubinstein & Lorr, 1956). Except for socioeconomic and educational indices—which generally correlate significantly with continuation in treatment but tend to be unrelated to outcome—most of the latter personality variables are likewise predictive of rated subsequent



improvement in psychotherapy. Thus the type of people who continue to participate and improve in psychotherapy have attributes similar to those of persons who, in laboratory studies of conformity, attitude change, and conditionability, show more responsiveness to almost any form of social influence procedure (Berg & Bass, 1961; Biderman & Zimmer, 1961; Janis & Hovland, 1959).

The above findings indicate that the social characteristics of clients, rather than the chosen psychotherapeutic method, are the main determinants of the successes of traditional psychotherapy. This may explain why, in spite of wide conceptual divergences, all “schools” of psychotherapy achieve very similar rates of improvement (Appel et al, 1951; Miles, Barrabee, & Finesinger, 1951) and, although differences may occasionally slightly favor the treated groups (Frank, Gliedman, Imber, Stone, & Nash, 1959;

Leary & Harvey, 1956), the magnitude of behavioral change exhibited by nontreated cases is not substantially less than change in clients who have undergone some traditional form of psychotherapy (Bergin, 1966). The types of clients who derive some benefit from participation in conventional forms of psychotherapy are likely to exhibit varying degrees of favorable improvement with little or no formal treatment (Frank et al., 1959; Saslow & Peters, 1956; Taylor, 1955). These demonstrable changes are probably a function of social-learning experiences resulting from casual or more structured interpersonal interactions with physicians, attorneys, clergymen, teachers, close and respected friends, and other societal agents who possess some degree of social power, prestige, and good judgment. All these different sources of social influence apparently rely primarily upon common—though not the most

reliable or potent—therapeutic elements for the modification of social behavior.

The overall outcome data accompanying conversational treatment approaches indicate the necessity for distinguishing between *psychotherapy* on the one hand, and *friendship experiences* on the other. In a thoughtful book entitled *Psychotherapy: The Purchase of Friendship*, Schofield (1964) contends that psychotherapists are essentially offering their clients a supportive substitute friendship which does not require technical professional training. He further argues that a wide range of persons within a society, by virtue of their superordinated social roles, their wisdom and devotion to service, are equally capable of providing friendships and satisfying discussions of personal concerns. Therefore, individuals who are in need of an understanding and trustworthy friend with whom they can

periodically share their problems, and those who are searching for a faith or a commitment that would add more purpose to their lives, might do better to seek the counsel and emotional support of respected colleagues and enlightened societal agents rather than to flock to psychotherapists whose training does not ensure special expertise in the value domain.

It should be recognized that, although thoughtful discussions in the context of a supportive friendship can be highly meaningful and satisfying, they generally have little impact on persons' specific behavioral difficulties. Few chronic stutterers, for example, have been cured through amity, introspective conversation, and wise counsel. In modifying persistent deviant behavior and in overcoming behavioral deficits, friendship alone is not enough. Special learning conditions must also be arranged and skillfully

implemented over a long period if desired psychological changes are to be consistently achieved and adequately maintained. The latter activities, for which the label “psychotherapy” is appropriate, require unique skills and specialized procedures for effecting predictable behavioral changes.

Recent years have witnessed a marked proliferation of psychological ventures designed to cure all types of social maladies. These endeavors include, among other things, meditation, massage, sensitivity training, and marathon social encounters in which participants from all walks of life are provided with opportunities to analyze each other’s interpersonal reactions. As long as such programs are not misrepresented and people find them personally rewarding they require no further validation. If, on the other hand, they are marketed as forms of psychotherapy, then

advocates of such procedures must be concerned about the consequences of their practices and they must assume responsibility for empirical verification of their claims. Moreover, ethical considerations require that clients specify the ways in which they wish to be changed, that the intended outcomes of the therapeutic process be made known, and that clients be informed of the likelihood that the treatment interventions will enable them to deal more effectively with the life problems for which they seek help.

While psychotherapists are promoting their favored insights in interview approaches they may often simultaneously (if inadvertently) reward their clients with approval for exhibiting desired response patterns and show disapproval of maladaptive forms; they may reduce anxieties through their permissive and supportive reactions toward clients' disturbing self-revelations; and

they inevitably model various attitudes, values, and interpersonal modes of behavior which clients are inclined to emulate. Many of the therapeutic changes that occur in conventional psychotherapy may therefore derive primarily from the unwitting application of social-learning principles. The point is that these beneficial outcomes are more readily attainable when principles are applied in a more considered and systematic manner.

Even if the traditional forms of psychotherapy had proved highly effective, they would still have limited social value. A method that requires extended and highly expensive training, that can be performed only by professional personnel, that must be continuously applied on a one-to-one basis over a prolonged period of time, and is most beneficial to self-selected highly suggestible persons cannot possibly have much impact on the countless social problems that demand

psychological attention. Major progress will be made in resolving these problems by concentrating on the development of highly efficacious principles of behavioral change and by utilizing the large pool of nonprofessional persons who can be trained to implement programs under competent guidance and direction. This approach would provide more people with more help than they receive under current professional practices.

#### *APPROACHES BASED ON SOCIAL-LEARNING PRINCIPLES*

In subsequent chapters of this book various social-learning approaches to the modification of diverse psychological phenomena will be considered in detail. The principles underlying each method will be reviewed along with experimental tests of their efficacy. In addition, the types of behavioral changes for which each procedure is best suited will be discussed.



Although major emphasis will be given to psychological variables that have been shown to exercise strong control over behavior, some attention will be devoted to pharmacological procedures, particularly when they are employed as adjuncts to social-learning procedures. The psychological emphasis, however, is not meant to minimize the genetic, biochemical, and neurophysiological determinants of behavior. A social-learning model does not, of course, assume that behavior is determined exclusively by psychological variables. Genetic endowment and constitutional factors may set certain limits on both the types of behavioral repertoires that can be developed in a given person, and the rate of response acquisition. In certain cases, neurophysiological conditions may contribute to the observed behavioral malfunctioning. Moreover, biological and psychological factors

typically interact in subtle and complex ways in producing certain patterns of social behavior.

It should also be noted in passing that physiological variables, to the extent that they serve as contributory factors, are most likely to be associated with nonspecific effects as reflected in the general tempo of responsiveness and the rate and level of response acquisition. Such variables do not, however, determine specific behavioral patterns, which are due to particular social-learning experiences. Genetic endowment cannot account for the difference between one schizophrenic who firmly believes that he is Jesus Christ, and another one who entertains no grandiose delusions. The idiosyncratic behavioral content is obviously learned rather than physiologically produced. Nor do capacity variables account for gross deficits in motor, conceptual, or affective responses that are clearly

within a person's capabilities. Unfortunately, deviant behavior is often prematurely attributed to physiological determinants, an attribution which results not only in therapeutic pessimism, but also effectively retards further psychological investigation of behavioral phenomena.

## Summary

This chapter has presented a social-learning interpretation of the mechanisms regulating behavior and contrasts this approach with theories that tend to assign causal properties to hypothetical internal forces. The differences in conceptual models are especially striking in explanations of deviant behavior that have traditionally been depicted as symptomatic by-products of a quasi-mental disease. From a social-learning perspective, behaviors that may be detrimental to the individual or that depart widely

from accepted social and ethical norms are considered not as manifestations of an underlying pathology but as ways, which the person has learned, of coping with environmental and self-imposed demands.

Psychopathology is not solely a property inherent in behavior but reflects the evaluative responses of societal agents to actions that violate prescribed codes of conduct. The social labeling of a given response pattern as a pathological expression is, in fact, influenced by numerous subjective criteria including the aversiveness of the behavior, the social attributes of the deviator, the normative standards of persons making the judgments, the social context in which the behavior is performed, and a host of other factors. Consequently, the same response pattern may be diagnosed as “sick” or may be normatively sanctioned and considered emulative by different

groups, at different times, or in different environmental settings. Considering the arbitrary and relativistic nature of the social judgment and definition of deviance, the main value of the normal versus abnormal dichotomy lies in guiding the social and legal actions of societal agents concerned with the maintenance of an efficiently functioning society. This dichotomy, however, has little theoretical significance, because no evidence exists that the behaviors so dichotomized are either qualitatively different or are under the control of fundamentally different variables.

Personality theories generally assume that energized traits and concealed motivational states impel behavior in a variety of directions. These hypothetical internal conditions tend to be regarded as relatively autonomous of external stimulation and their relationship to behavior remains somewhat loose. In social-learning theory

both deviant and prosocial behaviors are acquired and maintained on the basis of three distinct regulatory systems.

Some response patterns are primarily under external stimulus control. Autonomic responsiveness, such as changes in cardiovascular and gastrointestinal reactions, and emotional behavior, can be effectively brought under the control of environmental events through their contiguous association with either direct or vicarious affective experiences. Instrumental behavior is likewise precisely regulated by environmental stimuli that, by virtue of their association with different contingencies of reinforcement, signify the consequences that are likely to accompany certain courses of action. Some forms of deviant behavior primarily reflect defective or inappropriate stimulus control.

A second behavioral control system involves response feedback processes, mainly in the form of reinforcing consequences. Both prosocial and grossly deviant behaviors can be successively eliminated and reinstated by varying their immediate consequences. These influential aftereffects may include sensory experiences that are intrinsically produced by the activity itself, externally arranged tangible or symbolic outcomes, or self-evaluative reactions. The susceptibility of behavior to reinforcement control is further shown by the fact that even subtle variations in the frequency and patterning of outcomes result in distinct performance characteristics.

The third, and in many respects the most influential, regulatory mechanism operates through central mediational processes. At this higher level stimulus inputs are coded and

organized; tentative hypotheses about the principles governing the occurrence of rewards and punishments are developed and tested on the basis of differential consequences accompanying the corresponding actions; and, once established, implicit rules and strategies serve to guide appropriate performances in specified situations. Symbolically generated affective arousal and covert self-reinforcing operations may also figure prominently in the regulation of overt responsiveness.

In this conceptual scheme man is neither an internally impelled system nor a passive reactor to external stimulation. Rather, psychological functioning involves a reciprocal interaction between behavior and its controlling environment. The type of behavior that a person exhibits partly determines his environmental contingencies which, in turn, influence his behavior. In



succeeding chapters of this book the social-learning principles necessary to account adequately for the development of prosocial and deviant behavior will be further elaborated. We shall also demonstrate how these principles may be successfully applied to ameliorate developmental and clinical problems, and to effect broader social and cultural change.

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## Value Issues and Objectives

In developing and implementing programs for modifying behavior, the specification of goals is of central importance. If the objectives are poorly defined, an agent of behavioral change has no rational basis for selecting the appropriate treatment procedures or for evaluating the effectiveness of his efforts. Illustrations of how the choice of outcomes determines the selection of procedures are provided in diverse social practices. A physician, for example, does not prescribe medication or surgical intervention for his patient without first deciding what physical changes he wants to induce; a researcher does not choose independent variables for study in advance

of specifying the phenomena he wishes to modify; a travel agent does not select a route for a client before ascertaining his destination; and a teacher does not make assignments to his students in the absence of some type of educational objective. Similarly, the first major task in any successful program of behavior modification is to delineate the changes it aims to achieve.

Often the principal aims of social change enterprises are never clearly articulated, with the result that programs remain directionless or offer learning experiences that are selected fortuitously by personal preferences of the change agents rather than specifically for the needs of the recipients. Even more often, however, broad objectives are specified only in terms of ill-defined hypothetical states (rather than behavioral outcomes), which furnish little direction for the selection of appropriate methods and learning

experiences. Indeed, conceptualizing psychological abstractions as internal properties of clients rather than as hypothetical constructs of therapists has resulted in considerable confusion about the types of changes effected by different approaches to the modification of behavior.

It is widely assumed that behavioral and psychodynamic approaches are concerned with fundamentally different subject matters. The latter methods supposedly treat complexes, repressed impulses, ego strengths and mental apparatuses, the underlying causes of behavior, whereas behavioral approaches are believed to modify only superficial behavior. This apparent difference in subject matter, however, exists primarily in the therapists' conceptualizations, not in actual practice.

Ego strength, to take an example, is a

hypothetical construct and not an entity within the client. One can neither observe nor modify hypothetical constructs. The person's behavior—broadly defined to include cognitive, emotional, and motor expressions—is the only class of events that can be altered through psychological procedures, and therefore it is the only meaningful subject matter of psychotherapy. Similarly, stimulus variables are the only events that the therapist can modify to effect behavioral change. Psychotherapy, like any other social influence enterprise, is thus a process in which the therapist arranges stimulus conditions that produce desired behavioral changes in the client. If, for instance, a psychotherapist creates conditions that increase the frequency of the behaviors from which ego strength is inferred, the client will be said to have acquired increased ego strength as a function of treatment. On the other hand, if the frequency of



ego-strength behaviors has been reduced in the course of psychotherapy, the client has suffered a loss in ego strength. Clearly, ego strength is simply a hypothetical abstraction whose presumed behavioral referents are the only reality the psychotherapist can modify.

In the final analysis, social-learning approaches and all other existing forms of treatment modify the same subject matter, namely, behavioral phenomena. Most discussions of change-inducing processes, however, focus on treating the inferences made from behavioral events as though these abstractions existed independently and caused their behavioral referents. Philosophers of science have cautioned against the attribution of causal potency to described properties of behavior. Their warnings have had little impact on personality theorizing.

Neither traits nor types, as concepts, have

any real existence. They are merely words, and words do not exist in the eye of the observer nor in the people observed. A man can not be said to *have* either a type or a trait, but he can be said to *fit* either a type or a trait. At present the fit will be inexact, for dimensions of personality have not yet been quantified well enough to permit of accurate measurement. In the case of height, the measurement can be precise, and little confusion results from saying that a man *has* a certain height. Observation and concept are so closely related that the phrase is not ordinarily understood to mean more than it says, namely, that the extent of a given datum of observation in one direction fits a certain section of an ideal dimension of distance. But if an attempt is made to fit some mode of human conduct to the trait of courage, the looseness of correspondence between behavior and concepts leads to mischievous reification. The concept parts company with behavior, picks up undefined notions in its flight from reality, and finally acquires an independent real existence in its own right, so that when it is said that a man *has* courage, he will be thought of as the fortunate owner of something considerably

more significant than a certain pattern of behavior [Pratt, 1939, p. 115].

Similarly, a person who is plagued with “weak ego strength” will be viewed as suffering from something vastly more significant than the behavioral referents from which the construct is inferred.

For purposes of further illustration, let us designate behaviors in which persons violate social and legal codes of behavior and frequently engage in assaultive activities as the external expressions of an inferred zoognick. Based on prevailing clinical practices, the zoognick would come to represent an intrapsychically functioning agent. An honorific causative power would be conferred upon this hypothetical zoognick, whereas the observed behavior from which its existence is inferred would be depreciated as superficial behavioral manifestations. Before long,

psychological tests would be constructed to measure zoognick strength on the basis of which diagnosticians would tautologically attribute clients' behavior to the action of the underlying zoognick. Proceeding on the assumption that "patient variables are not conceived to be behaviors, but constructs concerning internal constellations" (Wallerstein, 1963), psychotherapeutic goals would be stated in terms of removing the pernicious zoognick. On the other hand, direct modification of the deviant behavior would be considered not only superficial but potentially dangerous, since elimination of the symptomatic expressions might force the zoognick to emerge in equally pernicious substitute forms. A sufficiently charismatic exponent of zoognick theory could undoubtedly develop a sizable following with the same extraordinary conviction in the vital importance and causative potency of

zoognicks as that shown by adherents of libidinal forces. Oedipal complexes, collective unconsciouses, and self-dynamisms. Finally, humanists would embrace zoognick theory as more befitting the complexities of human beings than those simplistic mechanistic doctrines that stubbornly insist that the zoognick is the deviant behavior rechristened.

Most treatment approaches devote remarkably little attention to the selection of objectives; when they are specified (Mahrer, 1967), the intended outcomes generally include a variety of abstract virtues described in socially desirable terms, such as reorganization of the self, restoration of functional effectiveness, development of individuation and self-actualization, establishment of homeostatic equilibrium, where there is id there shall ego be and where superego was there shall conscious ego be, achievement of identity,

acceptance of self-consciousness, enhancement of ego strength, or the attainment of self-awareness, emotional maturity, and positive mental health. While some of these objectives allude to vaguely defined behavioral characteristics, most refer to nebulous hypothetical states. These abstractions convey little information unless they are further defined in terms of specifically observable behavior.

### **Behavioral Specification of Objectives**

A meaningfully stated objective has at least two basic characteristics (Mager, 1961). First, it should identify and describe the behaviors considered appropriate to the desired outcomes. The term “behavior” is used in the broad sense to include a complex of observable and potentially measurable activities including motor, cognitive, and physiological classes of responses.

After the intended goals have been specified in performance, and preferably in measurable terms, decisions can be made about the experiences that are most likely to produce the desired outcomes. For example, the statement, "Increase the person's self-confidence and self-esteem," designates a therapeutic intent; but it furnishes little guidance, since it does not reveal the kinds of behaviors the person will exhibit after he has achieved increased self-esteem. Once self-esteem and the behaviors that will be esteem producing for a particular client have been delineated, one can arrange conditions that will create the requisite behaviors and thereby produce the condition of positive self-evaluation. In some instances learning vocational skills may be most relevant to acquiring self-esteem; in some cases developing interpersonal competencies that will secure positive responses from others may be most appropriate; in other

cases eliminating alienating social behaviors may be required if self-evaluation is to be altered; and finally, in cases where a person is relatively competent socially and vocationally, an increase in self-esteem behavior may require the modification of stringent, self-imposed standards of behavior upon which self-approving and self-deprecatory responses are contingent. Similarly, unless the goals specify the behavior that persons will exhibit when successfully self-actualized, internally integrated, self-accepted, personally reconstructed, homeostatically equilibrated, or emotionally matured, such goals provide little guidance.

In addition to describing the behaviors which reflect the chosen goals, objectives must often be further delineated by specifying the conditions under which one may expect the behavior to occur. Let us assume that increased assertiveness



is the goal for the treatment of an excessively passive individual. After assertive behavior is defined in sufficient detail that there is little ambiguity about the interpersonal skills to be learned, appropriate conditions can be arranged to produce the desired changes. To demonstrate, however, that the person has achieved the objective, one would not require him to exhibit assertive behavior in all social situations. Because interpersonal demands are complex, effective social functioning requires a well-discriminated repertoire of behavior. Therefore a complete statement of objectives should specify to what degree the modified behavior is expected to be linked to social conditions.

The emphasis on behavioral specification of goals is not intended to encourage the selection of inconsequential outcomes. Instead, it places greater demands on change agents for careful

analysis of complicated objectives that cannot be successfully attained by any method as long as they remain couched in ill-defined, general terms. Complex behavior is an aggregate of simpler components which must be individually learned and appropriately integrated. After complex performances have been adequately analyzed, conditions that will permit learning of the component behaviors can be designated. Without this type of behavioral analysis, change agents remain at a loss how to proceed and simply fall back on favorite routines.

Behaviorally defined objectives not only provide guidance in selecting appropriate procedures, but they serve an important evaluative function as well. When desired outcomes are designated in observable and measurable terms, it becomes readily apparent when the methods have succeeded, when they

have failed, and when they need further development to increase their potency. This self-corrective feature is a safeguard against perpetuation of ineffective approaches, which are difficult to retire if the changes they are supposed to produce remain ambiguous.

### *SEQUENCING OF INTERMEDIATE OBJECTIVES*

Establishing complex social behavior and modifying existing response patterns can be achieved most consistently through a gradual process in which the person participates in an orderly learning sequence that guides him stepwise toward more intricate or demanding performances. Although the specification of ultimate objectives provides some direction and continuity to a program of change, day-to-day progress is most influenced by defining intermediate objectives and the learning

experiences necessary for their attainment. A comprehensive statement of objectives should, therefore, contain a sequence of intermediate goals that lead gradually to more complex modes of behavior.

This principle of gradation is applied extensively in the social-learning procedures discussed in succeeding chapters. In each case, complex behavior outcomes are analyzed into smaller subtasks and sequenced so as to ensure optimal progress. For example, fearful responsiveness and defensively avoidant behavior can be successfully eliminated by either direct exposure to aversive events (Grossberg, 1965; Herzberg, 1945); by exposure to models boldly exhibiting approach behavior toward fear-provoking situations (Bandura, Blanchard, & Ritter, 1968; Bandura, Grusec, & Menlove, 1967); or by symbolic reinstatement of threatening

events in the context of strong competing positive responses (Wolpe, 1958). The therapist first devises a ranked set of threatening situations to which the client responds with increasing degrees of anxiety. Initially the client is presented with the least threatening event under favorable conditions until his emotional responses have been thoroughly extinguished. As treatment progresses the fear-arousing properties of the aversive situations are gradually increased until emotional responsiveness to events that originally he found most threatening is extinguished. While stimulus gradation is not a necessary condition for extinguishing fearful behavior, it permits greater control over the direction and progress of behavior changes.

Hierarchical organization of learning experiences is even more useful in programs designed to develop new patterns of behavior,

because the response elements that compose complex performances may themselves be relatively intricate compounds. Therefore, complicated response patterns cannot be taught without first establishing the necessary components. In social practice, intricate modes of behavior are best attained stepwise by modeling progressively more complex responses Bandura, 1969; Lovaas, 1967) and reinforcing gradual response elaborations.

Skillful sequencing of intermediate objectives can help achieve desired goals in several ways. By approaching a complicated learning outcome through successive subtasks, experiences of failure can be reduced to a minimum, because no subtask requires constituent skills that participants do not already possess. The degree of positive reinforcement can therefore be maintained at a high level by continuous progress.

If, on the other hand, people are required to attempt complex behavior prematurely, they experience a great many unnecessary failures. These experiences may jeopardize the treatment program by decreasing positive motivation, by inviting obstructive and avoidant responses, and even by augmenting deviant behaviors that the treatment was designed to modify. Graded objectives both permit greater control over learning outcomes and guide and focus the behavior of participants throughout all stages of treatment. Change programs that are poorly organized as evidenced by isolated, haphazard, and inadequately sequenced learning experiences will produce discouraging results, however valid the principles supposedly guiding the social practices.

### **Factors Impeding Specification of Objectives**

In view of the importance of defining the necessary learning conditions in terms of clearly specified goals, it is surprising that objectives are accorded little consideration in the theorizing and practice of psychotherapy. Almost without exception, treatises on psychotherapy contain detailed prescriptions of the conditions essential for effecting changes and admonitions about the hazards of deviating from prescribed methods. The outcomes that these procedures are designed to produce and the value judgments implied by these goals are inadequately explicated. Several possible reasons may account for this traditional inattention to issues of goal selection.

#### *ADVOCACY OF NONCONTINGENT SOCIAL REINFORCEMENT*

It is widely believed that noncontingent “relationship” experiences are the primary determinants of behavioral change, and



consequently that the specific methods employed are of secondary importance. In a “therapeutic” atmosphere in which the therapist exhibits permissive, non- judgmental and unconditionally positive attitudes, it is contended, a variety of methods, within certain broad limits, will produce essentially similar changes in behavior.

This view—which is somewhat analogous to relying on “bedside manner” rather than on specific therapeutic interventions in the alleviation of physical disorders—can be seriously questioned by an example in which objectives are clearly identified. Let us assume that two children have been referred for treatment, one passive and nonaggressive, the second exhibiting a hyperaggressive pattern of behavior. Since the goal is to increase assertiveness in the passive child and to decrease the domineering tendencies of the hyperaggressive child, should the therapist

employ the same methods? Clearly the answer is in the negative. Based on established principles of behavior change, procedures aimed at reducing inhibitions (Wolpe, 1958), the provision of assertive models of behavior (Bandura, 1965) and the reinforcement of assertive response patterns (Jack, 1934; Page, 1936; Walters & Brown, 1963) are most appropriate and effective for promoting increased assertiveness. These methods, however, would be clearly inappropriate in the treatment of the hyperaggressive child, since they would simply strengthen the already persistent deviant behavior. Withdrawal of rewards for aggression (Brown & Elliott, 1965) combined with modeling and positive reinforcement of nonaggressive frustration responses (Chittenden, 1942) is highly effective for decreasing aggressiveness. Although in both of these hypothetical cases warmth, interest, understanding, and other relationship

factors would apply equally, it is unrealistic to expect these general factors to increase aggressiveness in one child and to reduce it in the other. Nevertheless therapists often adhere to a single set of therapeutic conditions, disregarding the nature of the client's deviant behavior. Maladaptive behavior may thus be strengthened rather than weakened in cases for whom the learning conditions are inappropriate.

The relationship view of behavioral modification also implies that no significant permanent changes in social behavior can be achieved unless a social relationship is firmly established. Until recently it has likewise been confidently believed that a beneficent teacher-student relationship is a necessary precondition in the educational process. Comparative studies, however, reveal that self-instructional programs can equal or even surpass the efficacy of

instructors in promoting learning. The assumption that relationship factors are requisite for the acquisition and modification of social behavior is refuted by countless studies of social learning. One can, for example, acquire complex patterns of social behavior by observing either symbolic or real life models with whom no prior relationship has been developed (Bandura, 1965). Moreover, many responses that are utilized interpersonally were originally acquired under noninterpersonal conditions. This transfer process is demonstrated experimentally by Walters & Brown (1963), who found that children who were intermittently reinforced for hitting an automated Bobo doll subsequently displayed an increase in physically aggressive behavior toward other children in thwarting situations.

Relationship experiences are often designated nonspecific influences and contrasted with various

learning procedures which are referred to as specific influences. It is difficult to conceive of nonspecific influences in social interchanges. Each expression by one person elicits some type of response from the other participant, which inevitably creates a specific reinforcement contingency that has a specific effect on the immediately preceding behavior. Numerous studies of change processes stimulated by social reinforcement theory disclose that interpersonal responses have specific and predictable effects on behavior. It is possible, of course, for a change agent to display uniformly positive or negative responses without regard to the behavior of another person. In such instances, however, it might be more accurate to characterize the social interaction as involving indiscriminate, rather than noncontingent, reinforcement. It has been shown by Hart, Reynolds, Baer, Brawley, & Harris

(1968) and others that abundant social responsiveness provided on such a “nonconditional” basis can neither create nor maintain beneficial personality characteristics. Guideless interest is clearly not enough.

Lest readers conclude that social-learning approaches neglect relationship variables it should be emphasized here that, quite the contrary, social reinforcement processes assume a role of major importance in the modification and maintenance of personality patterns. Indeed, it is research conducted within the social-learning framework that has shown most conclusively that relationship experiences can exert powerful control over behavior. The central issues are, therefore, whether a social relationship is regarded as a facilitative or a necessary condition for learning, and whether it is utilized ritualistically or considerately to benefit the

recipients. Chapter 4 includes a large body of empirical evidence demonstrating that grossly deviant behavior in both children and adults — including infantile behavior, self-destructive tendencies, hypochondriacal and delusional behavior, extreme withdrawal, chronic anorexia, psychogenic seizures, psychotic tendencies and other deleterious behaviors— can be eliminated, reinstated, and substantially increased depending upon the amount of interest, attention, and solicitous concern such behaviors elicit from others. A positive relationship thus has the potentiality both to help and to harm. The well-intentioned, benign attitudes frequently advocated by many theories of personality may actually foster social reinforcement contingencies that have injurious consequences; this consideration suggests that child-rearing, educational, and therapeutic practices must be evaluated by their

effects upon recipients rather than by the humanitarian intent of change agents. Many well-meaning people who subscribe to these mental hygiene practices, which have been widely promulgated over the years, may at times inadvertently support or even increase the very problems their earnest efforts are designed to ameliorate (Harris, Wolf, & Baer, 1964; Gelfand, Gelfand, & Dobson, 1967; Lovaas, Freitag, Gold, & Kassorla, 1965).

A principal assumption of most conventional approaches to treatment is that clients will reenact in their relationship with the psychotherapist the maladaptive interpersonal patterns that characterize their everyday interactions with significant persons. Once evoked in various strengths and guises, the inappropriate nature of these transferred reactions can be demonstrated and presumably modified within the therapeutic



setting. Alexander (1956), among others, questioned these assumptions regarding transference phenomena. He argued that the marked dissimilarity of the therapy situation and the social characteristics of the therapist may not constitute a suitable stimulus for eliciting strong generalized responses. Hence, many of the clients' behavioral problems could not be effectively modified solely in relation to the therapist. Moreover, those who lead emotionally impoverished lives often become more interested in securing positive reinforcement from their therapists than in solving their interpersonal problems. Personality changes are further obstructed if therapists, due to limited satisfaction in their own nonprofessional relationships, use their clients as a substitute source of gratification. For these and other reasons, Alexander recommended greater utilization and

extratherapeutic relationships for effecting changes in social behavior.

It is evident from outcome studies reviewed in Chapter 1 that, whatever clients may reenact with their psychotherapists, relatively few beneficial effects of these reenactments trickle down to daily interpersonal living. Most likely the artificial relationship provides substitute gratifications for those lacking in the clients' natural relationships instead of serving as a major vehicle for personality change. Persons would be helped more fundamentally if their behavior patterns were modified to enable them to derive greater satisfactions from their everyday relationships, thereby making the purchased relationship unnecessary.

Many psychotherapists who do not subscribe to the transference theory nevertheless assume

that a benign, noncontingent attitude toward clients will produce beneficial personality changes. Strict adherence to the position that therapists should be unconditionally accepting is virtually impossible, as shown in numerous content analyses (Bandura, Lipsher, & Miller, 1960; Dittes, 1957; Goldman, 1961; Winder, Ahmad, Bandura, & Rau, 1962). Therapists, including those who advocate unconditional positive regard (Murray, 1956; Truax, 1966), display consistent patterns of approving and disapproving responses to their clients' behavior. Even if unconditional social approval and acceptance were possible, it would be no more meaningful as a precondition for change than noncontingent reinforcement in modifying any form of behavior. If this principle were, in fact, applied in child-rearing, parents would respond approvingly and affectionately when their children

appeared with stolen goods, behaved unmanageably in school, physically injured their siblings and peers, refused to follow any household routines, and behaved maliciously. “Unconditional love” would make children directionless, irresponsible, and completely unpredictable. Similarly, if researchers practiced indiscriminate positive reinforcement in experiments in the process of social learning, they would undoubtedly obtain meager results. Perhaps this circumstance is relevant to the psychotherapy outcome data discussed in the introductory chapter.

Another corollary of the relationship view is that psychotherapists should select the methods of treatment that they feel most comfortable in employing. If such reasoning guided the practice of medicine—suppose a patient with a brain tumor consults a surgeon who feels most comfortable in

performing appendectomies and therefore extracts the patient's appendix—a sizeable portion of the patient population would have long since departed, while an even larger number would find themselves in short supply of convenient anatomical structures. Successful modification of behavior requires certain learning conditions. Therefore, in planning a change program, the primary focus should be on desired objectives and their requisite conditions rather than on the comforts of the change agents. This does not minimize the individual differences in psychotherapists' capabilities for creating different types of learning conditions. Rather it highlights the necessity of selecting change agents on the basis of the desired learning outcomes.

The common deemphasis of methods and objectives also derives from the fact that most psychotherapists are trained essentially in a single

treatment approach, which they apply with minor variations to a wide range of deviant behavior patterns. Rogerians offer their clients a particular all-purpose brand of psychotherapy, psychoanalysts provide a somewhat different standard brand; similarly, Adlerians, Jungians, Sullivanians, Gestaltists, existentialists, and Rankians present still different forms of omnibus psychotherapy. Since the client must conform to the method offered rather than having procedures selected for him in terms of specified objectives, the treatment he will receive is fortuitously determined by the school affiliation of his psychotherapist.

School affiliations not only determine the range of procedures that a therapist will employ in his practice; they also define the client's central problems, which the techniques of the school are designed to resolve. Psychoanalysts will uncover

and resolve Oedipal conflicts; Adlerians will discover inadequacy problems and alter the resultant compensatory power striving; Rogerians will unearth and reduce self-ideal discrepancies; Rankians will resolve separation anxieties; existentialists will actively promote awareness of self-consciousness. Thus in traditional approaches therapeutic procedures and objectives tend to be preselected with little reference to the diverse forms of deviance exhibited by different persons. Considering the accidental way in which behavioral deviations are matched with learning conditions, it is not at all surprising that clients often terminate therapy after only a few interviews, and that one cannot determine the probability of improvement for those who remain. A social-learning approach does not rely upon a single set of conditions for effecting personality changes, but rather it provides, within a unified

framework, diverse methods for modifying multiform psychological phenomena.

Psychotherapists who are less strongly committed to a particular theoretical orientation generally attempt to vary techniques adopted from different systems to particular problems. However, because the literature does not provide explicit criteria for the choice of different methods, the range of procedures therapists do possess is utilized more according to their intuition. These attempts are therefore less definite, less comprehensive, and usually less effective than a program in which particular interventions are used because of their demonstrated effects on social behavior.

#### *SELECTION OF OBJECTIVES AND ETHICAL ISSUES OF BEHAVIORAL CONTROL*

Behavioral objectives are frequently



unspecified in order to avoid acknowledging the value judgments and social influences involved in the modification of behavior. Psychotherapists who subscribe to conversational methods customarily portray their form of treatment as a noncontingent social influence process in which the therapist serves as an unconditionally loving, permissive, understanding, empathizing catalyst in the client's efforts toward self-discovery and self-actualization. In contrast, behaviorally oriented psychotherapists are typically depicted as antihumanistic, Machiavellian manipulators of human behavior (Jourard, 1961; Patterson, 1963; Rogers, 1956; Shoben, 1963). In truth, to the extent that the psychotherapist—regardless of his theoretical allegiances—has been successful in modifying his clients' behavior, he has either deliberately or unwittingly manipulated the factors that control it. It is interesting to note in

this connection that conditions that are undesignedly imposed upon others are generally regarded with favor, whereas identical conditions created after thoughtful consideration of their effects on others are often considered culpable. There exists no other enterprise which values incognizance so highly, often at the expense of the client's welfare. One suspects that this therapist-centered value system would change rapidly if therapeutic contracts required financial remuneration to be made at least partially contingent upon the amount of demonstrable change achieved by clients in the interpersonal problems for which they seek help.

In view of the substantial research evidence that psychotherapists serve as models for, and selective reinforcers of, their clients' behavior (Bandura, Lipsher, & Miller, 1960; Goldman, 1961; Murray, 1956; Rosenthal, 1955; Truax, 1966;

Winder et al., 1962), it is surprising that many therapists continue to view the psychotherapeutic process as one that does not involve behavioral influence and control.

In later writings, Rogers (1956), a leading proponent of the anticontrol position, has acknowledged that psychotherapists do in fact manipulate and control their clients' behavior within the treatment setting. He contends, however, that this benevolent external control yields "self-actualized," "flexible," and "creatively adaptive" persons whose post-therapy behavior is under internal control and no longer subject to the psychotherapist's influences. The actual outcomes, however, are considerably at variance with these idealized pretensions. A brief comparison of interview protocols of cases treated by Rogerian therapists with those of clients seen by therapists representing differing theoretical orientations

clearly reveals that, far from being individuated and self-actualized, the clients have been thoroughly conditioned and converted to the belief system, vernacular, and interpretations of reality favored by their respective psychotherapists. Such conformity in verbal behavior is partly achieved through selective reinforcement. Sequential analyses of verbal interchanges in cases treated by Rogers revealed that the therapist consistently approved certain behaviors and disapproved others (Murray, 1956; Truax, 1966). As treatment progressed, approved responses increased in frequency while disapproved verbalizations diminished.

In the often quoted debate between Rogers and Skinner (1956) concerning the moral implications of behavioral control, Rogers distinguishes among three types of control; this provides an excellent illustration of the use of

propitious relabeling to minimize the ethical decisions that confront therapists and other agents of change. In the first category, designated as *external control*, person A creates conditions that alter person B's behavior without his concurrence. The second and presumably more humanitarian form, labeled *influence*, involves processes in which A arranges conditions that modify B's behavior, to which he gives some degree of consent. The distinction between external control and influence, however, is more apparent than real. In many instances certain conditions are imposed upon individuals without their agreement, knowledge, or understanding, from which they can later free themselves by willingly changing their behavior in a direction subtly prescribed by controlling agents. Thus, for example, persons who have been legally committed to mental hospitals or penal

institutions may voluntarily enter into treatment programs to acquire the types of behavior that will improve their living circumstances in the institution and ensure a speedy discharge. A more fundamental ethical distinction can be made in terms of whether the power to influence others is utilized for the advantage of the controller or for the benefit of the controllee, rather than in terms of the illusory criterion of willing consent.

*Internal control*, Rogers' third category, involves a process in which a person arranges conditions so as to manage his own responsiveness. Although self-monitoring systems play an influential role in the regulation of human behavior, they are not entirely independent of external influences. Self-monitoring systems are transmitted through modeling and reinforcement processes. After a person has adopted a set of behavioral standards for self-evaluation he tends

to select associates who share similar value systems and behavioral norms (Bandura & Walters, 1959; Elkin & Westley, 1955). The members of his reference group, in turn, serve to reinforce and to uphold his self-prescribed standards of conduct. A person who chooses a small select reference group that does not share the values of the general public may appear highly individualistic and “inner- directed,” whereas in fact he is very much dependent on the actual and fantasied approval and disapproval of a few individuals whose judgments he values highly.

During the course of psychotherapy, clients likewise adopt, through modeling, their therapists’ values, attitudes, and standards of conduct for self-evaluation (Pentony, 1966; Rosenthal, 1955). Responsiveness to modeling influences is apt to be particularly enhanced in a relationship in which a person has developed a strong positive tie to a

prestigious model (Bandura & Huston, 1961; Henker, 1964; Mussen & Parker, 1965), a condition which is emphasized considerably in most forms of psychotherapy. Studies of modeling effects further disclose that persons tend to perform the model's behavior in his absence (Bandura & Kupers, 1964; Bandura, Ross, & Ross, 1963), and they respond to new situations in a manner consistent with the model's dispositions even though they have never observed the model's behavior in response to the same stimuli (Bandura & Harris, 1966; Bandura & McDonald, 1963; Bandura & Mischel, 1965). These findings indicate that after the model's attitudes and behavioral attributes have been adopted, he continues to influence and indirectly to control the subject's actions, though he is no longer physically present. In fact, in Rogers' (1951) conceptualization of maladjustment, introjected parental values are



construed as continuing pathological influences that maintain disturbing incongruities in the clients' self-structure. However, after internalized parental values are supplanted by adoption of the therapist's attitudes and standards, the client is flatteringly portrayed—by the psychotherapist—as self-actualized, flexibly creative, and self-directed!

Much of the controversy between Rogers and Skinner centers around their own value preferences for others. Skinner advocates that people be made “truly happy, secure, productive, creative, and forward-looking”; Rogers argues in favor of self-direction and self-actualization of potentialities as the prescribed objective of social influence. It might be noted parenthetically that in the context of proclaiming the self-actualization objective, Rogers argues vigorously against self-actualization in Skinnerian directions. The

leitmotif in this discourse appears to be one of belief conformity rather than self-realization. As usually happens in disputes over therapeutic outcomes, “happiness” and “conformity to societal norms” are selected as examples of unwholesome outcomes equated with slothfulness; self-actualization, on the other hand, is proffered as an ennobling aim. To balance the evaluative scales, it should be noted that the self-centered ethic of self-actualization might be equally questioned on moral grounds, particularly by innocent victims of self-actualized despots or less notorious but selfish, self-directed persons. Universally accepted goals are difficult to come by because all the various patterns of behavior enthusiastically promoted by therapists of different persuasions can be used to produce inimical human effects.

The most remarkable feature of the foregoing, seemingly humanistic, rhetoric is that neither

participant acknowledges that the choice of behavioral objectives is rightfully the *client's*. A person may seek from therapy neither Skinner's security nor a Rogerian conversion in the guise of self-realization. We shall return shortly to this issue of value standardization and the inclination of therapists to impose their own cherished objectives upon their clients.

Contrary to the beliefs of Rogers, Shoben, and other critics, behaviorally oriented approaches usually involve considerably less unnecessary control and manipulation of attitudes and values than do the procedures based upon the psychodynamic model. In the latter treatments, any behavior, no matter how trivial or apparently irrelevant, tends to be viewed as a derivative of concealed psychodynamic forces and is therefore subject to analysis and reinterpretation in terms of the therapist's theoretical predilections. Thus

virtually no aspect of the client's life—his social, marital, and sexual behavior, his political and religious beliefs, his vocational choice, his child-training practices—escapes the therapist's repeated scrutiny and influence over a period of several years. Since this approach tends to regard behavioral difficulties as superficial manifestations of more fundamental and often unconscious internal events, influence attempts are primarily directed toward subject matters of questionable relevance. It is not uncommon, therefore, to find clients whose belief systems have been thoroughly modified despite little amelioration of the behavioral difficulties for which they originally sought help.

In contrast, behaviorally oriented therapists generally confine their therapeutic efforts to the behavioral problems presented by the client. These are labeled as learned styles of behavior

rather than as expressions of esoteric unconscious processes or as manifestations of mental disease. Moreover, the procedures and objectives are undisguised, the treatment is typically of shorter duration, and clearly goal-directed. To be sure, within this highly structured interaction, the therapist must exercise responsible control over conditions affecting relevant segments of the client's behavior if he is to fulfill his therapeutic obligations. In this type of approach, however, the psychotherapist is less inclined to condition and to shape his client's belief systems in accordance with his own views. Paradoxical as it may seem, the psychotherapists who pride themselves on being nonmanipulative and noncontrolling are, albeit unwillingly, often engaged in a more disguised and manipulative enterprise than is true of most behaviorally oriented practitioners. It should be made clear, however, that behavioral

principles do not dictate the manner in which they are applied. Undoubtedly some behavioral therapists encroach on people's rights to decide the direction in which their behavior will be modified, and act as therapeutic agents devoid of consideration and regard for values.

#### *ESTABLISHMENT OF FREEDOM OF CHOICE THROUGH BEHAVIORAL APPROACHES*

Discussions of the moral implications of behavioral control almost always emphasize the Machiavellian role of change agents and the self-protective maneuvers of controllees. The fact that most persons enter treatment only as a last resort, hoping to modify patterns of behavior that are seriously distressful to themselves or to others, is frequently overlooked. To the extent that therapists engage in moral agonizing, they should fret more about their own limited effectiveness in helping persons who are willing to undergo

financial hardships to achieve desired changes, than in fantasizing about their potential powers. The tendency to exaggerate the powers of behavioral control by psychological methods alone, irrespective of willing cooperation by the client, and the failure to recognize the reciprocal nature of interpersonal control obscure both the ethical issues and the nature of social influence processes.

In discussing moral and practical issues of behavioral control it is essential to recognize that social influence is not a question of imposing controls where none existed before. All behavior is inevitably controlled, and the operation of psychological laws cannot be suspended by romantic conceptions of human behavior, any more than indignant rejection of the law of gravity as antihumanistic can stop people from falling. As Homme and Tosti (1965) point out, "either one

manages the contingencies or they get managed by accident. Either way there will be contingencies, and they will have their effect [p. 16].” The process of behavior change, therefore, involves substituting new controlling conditions for those that have regulated a person’s behavior. The basic moral question is not whether man’s behavior will be controlled, but rather by whom, by what means, and for what ends.

The primary criterion that one might apply in judging the ethical implications of social influence approaches (Kelman, 1965) is the degree to which they promote freedom of choice. It should be added, however, that if individualism is to be guaranteed, it must be tempered by a sense of social obligation. Custodial institutions created by societies are highly populated with socially injurious individualists. A person’s freedom of self-expression can be restricted in several ways,



each of which presents somewhat different ethical problems in the reestablishment of self-determination.

*Self-restraints* in the form of conditioned inhibitions and self-censuring responses often severely curtail a person's effective range of behaviors and the types of options that they are likely to consider for themselves. In many instances, for example, persons are unable to participate freely in potentially rewarding social interactions because of severe phobias; they are unable to engage in achievement, aggressive and heterosexual activities; and they deny themselves socially permissible gratification because of austere, self-imposed standards of conduct. Treatment programs designed to reduce rigid self-restraints are rarely viewed as ethically objectionable, since they tend to restore spontaneity and freedom of choice among various

options of action. Ethical issues arise only if a change agent uses his influence selfishly or to make his clients socially irresponsible.

*Behavioral deficits* also greatly restrict freedom of choice and otherwise curtail opportunities for self-direction. Persons' positions in various status and power hierarchies are to a large extent determined by their social, educational, and vocational competencies. The degree of control that one can exercise over one's own activities, the power to form and to modify one's environment, and the accessibility to, and control over, desired resources increase with higher status positions. Persons who have developed superior intellectual and vocational capabilities enjoy a wide latitude of occupational choices; they are granted considerable freedom to regulate both their own activities and the behavior of others; and they have the financial means of obtaining additional

privileges that further increase their autonomy. By contrast, high school dropouts who lack sociovocational proficiencies are relegated to a subordinate status, in which not only is their welfare subject to arbitrary external controls, but they are irreversibly channeled into an economic and social life that further restricts their opportunities to use their potentialities and to affect their own life circumstances. Eliminating such behavioral deficits can substantially increase the level of self-determination in diverse areas of social functioning.

*Societally imposed restrictions* on freedom of self-expression occur as responses to deviant behavior that violates legal codes. Chronic alcoholics, drug addicts, sexual deviates, delinquents, psychotics, and social nonconformists and activists may have their liberties revoked for fixed or indefinite periods when their public

actions are judged to be socially detrimental and therefore to be subject to social control. Special ethical problems are most likely to arise wherever restoration of his freedom is made contingent upon the individual's relinquishing socially prohibited patterns of behavior. If an agent of change acts in opposition to the society which supports him institutionally, then he evades his broader social responsibilities with which he has been entrusted. If, on the other hand, he imposes conditions upon his captive clients designed to force conformity to social norms, he is subverting the client's right to choose how he shall live his life. These moral dilemmas are less difficult to resolve in cases where the person's behavior injures or infringes the freedom of others. Such persons have the choice of regaining their autonomy by undergoing changes within a broad range of socially tolerated alternatives, or setting

no limits on their own behavior and having society restrict them to institutions. The ethical dilemma is more serious when conventional norms are questioned by many members of society and new standards of behavior are advocated. Today there are open controversies over the morality of homosexuality, premarital sexual intercourse, use of nonaddictive drugs, civil disobedience to unjust rules, and many forms of social behavior that are publicly defined as illegal. In such cases as these, therapeutic agents may support changes in socially prescribed directions or give legitimacy to deviant patterns, depending upon the social and personal consequences of the behavior, the client's preferences, and the therapist's own value orientation.

Most people whose freedom is curtailed by societally imposed restrictions and who voluntarily seek psychotherapeutic help are not

that strongly wedded to deviant behavior; but because it is powerfully reinforcing, or because they lack more satisfying alternatives, they have difficulty relinquishing it. The establishment of self-control and the reduction of positive valences associated with deviant activities may sometimes require the use of aversive procedures as part of the treatment program. The use of aversive methods is apt to be criticized as being, if not anti-therapeutic, then certainly antihumanistic. But is it not far more humanitarian to offer the client a choice of undergoing a brief, painful experience to eliminate self-injurious behavior, or of enduring over many years the noxious, and often irreversible, consequences that will inevitably result if his behavior remains unaltered?

Restrictions of behavioral freedom arise also from *socially sanctioned discrimination*. In such cases a person's freedom is curtailed because of

his skin color, his religion, his ethnic background, his social class, or other secondary characteristics. When a person's warranted self-determination is externally restricted by prejudicial social practices, the required changes must be made at the social systems level.

It is often mistakenly assumed (London, 1964) that traditional psychotherapies fervently embrace humanism whereas behavioral approaches, for reasons never explicated, are supposedly uninterested in the moral implications of their practices or are antagonistic toward humanistic values. In fact, behavioral therapy is a system of principles and procedures and not a system of ethics. Its methods, and any other effective procedures for that matter, can be employed to threaten human freedom and dignity or to enhance them.

When freedom is discussed in the abstract it is generally equated with nondeterminism; conversely, automatonism is associated with a deterministic position. Whether freedom and determinism are compatible or irreconcilable depends upon the manner in which causal processes are conceptualized. According to prevailing theories of personality, human actions are either impelled from within by concealed forces or externally predetermined. If individuals were merely passive reactors to external influences, then their behavior would be inevitable; it would be absurd to commend them for their achievements or to penalize them for their transgressions. It would be more sensible, from this point of view, to praise and to chastise the external determinants. But since these events are also unavoidably determined by prior conditions, the analysis results in an infinite



regression of causes. Some degree of freedom is possible within a deterministic view if it is recognized that a person's behavior is a contributing factor to subsequent causal events. It will be recalled from the previous discussion of reciprocal influence processes that individuals play an active role in creating their own controlling environment.

From a social-learning point of view freedom is not incompatible with determinism. Rather a person is considered free insofar as he can partly influence future events by managing his own behavior. One could readily demonstrate that a person can, within the limits of his behavioral capabilities and environmental options, exercise substantial control over his social life by having him plan and systematically carry out radically different courses of action on alternate days. Granted that the selection of a particular course of

behavior from available alternatives is itself the result of determining factors, a person can nevertheless exert some control over the variables that govern his own choices. Indeed, increasing use is being made of self-control systems (Ferster, Nurnberger, & Levitt, 1962; Harris, 1969; Stuart, 1967) in which individuals regulate their activities to fulfill their own wishes by deliberate self-management of reinforcement contingencies. The self-control process begins by informing individuals of the types of behaviors they will have to practice to produce desired outcomes, of ways in which they can institute stimuli to increase the occurrence of requisite performances, and of how they can arrange self-reinforcing consequences to sustain them. Behavioral change procedures that involve role enactment also depend upon the self-determination of outcomes through clients' regulation of their own behavior and the

environmental contingencies that reciprocally influence it. Contrary to common belief, behavioral approaches not only can support a humanistic morality, but because of their relative effectiveness in establishing self-determination these methods hold much greater promise than traditional procedures for enhancement of behavioral freedom and fulfillment of human capabilities.

*BEHAVIORAL OBJECTIVES IN THE MODIFICATION  
OF INTERNAL STATES AND COMPLEX  
DYSFUNCTIONS*

Thus far the failure to orient treatment to desired behavioral outcomes has been attributed to the prevalence of all-purpose single-method therapies, to reliance on benign relationship factors to produce diverse changes, and to reluctance to acknowledge the issues of values and behavioral control involved in the modification of

social behavior. The failure to specify objectives in behavioral terms also stems in part from the view that, in many cases, internal psychic states may constitute the major problems requiring modifications. These conditions are usually defined in such broad terms as unhappiness, absence of meaning and purpose in life, and feelings of worthlessness. Before speculating on how phenomenological events can be most effectively altered, it should be noted that it is highly fashionable to construe one's concrete behavioral problems in abstract, cosmic terms. It is understandably less distressing to present one's plight as a manifestation of social maladies of alienation, exploitation, or dehumanization than it is to acknowledge despairing personal shortcomings, evident heterosexual inadequacies, intellectual failures, lack of vocational ingenuity and productivity, and inability to form satisfying

interpersonal relationships.

Abstract problems such as “unhappiness,” and “purposelessness” cannot be successfully modified by any form of treatment as long as they remain disconnected from their concrete experiential determinants. A person does not feel abstractly unhappy; he is most likely distressed about specific problems arising from his mode of functioning in social, vocational, sexual, or familial areas. After the contributing conditions have been identified, an appropriate treatment program can be devised. The principal difficulty in modifying complex conditions is not that behavioral approaches are inapplicable, but that the psychological phenomenon is generally described in global abstract terms and the constituent determinants are never clearly specified.

Greatest progress will be made in the

successful treatment of so-called complex disorders when they are conceptualized, not as nebulous general states, but as psychological conditions involving multiple problems with varying degrees of interdependence. From this perspective, altering complex behavioral dysfunctions does not require radically different methods from those applied to the modification of single disorders. This issue can perhaps be illustrated by considering learning deficits. A child may have developed satisfactory academic skills in all areas except mathematics. Another child is grossly deficient in mathematics and in other academic skills, lacks social behavior skills that would enable him to maintain satisfying interpersonal relationships, and has not developed motor competencies required for play activities. There exists no single nonspecific treatment that can simultaneously create competencies in

intellectual, linguistic, social, and motoric areas of functioning. Separate programs would have to be devised for each type of problem. But the procedures used to develop arithmetic competencies would be essentially the same in the single-problem and the multiple-problem case. This is precisely the approach employed by Lovaas (1967) in establishing language functions, interpersonal capabilities, and intellectual skills, and in eliminating grossly bizarre behavior in autistic children who present, in extreme forms, one of the most generalized and complex psychological disorders that therapists are called upon to treat. Additional examples of successful modification of multiform problems through specific diverse treatments is provided by Patterson & Brodsky (1967), and by Risley & Wolf (1966). The developments in behavioral therapy in some respects parallel those in medicine, where

global all-purpose treatments of limited efficacy were eventually replaced by powerful specific procedures for treating particular physical disorders.

The behavioral change process is not as piecemeal as the preceding remarks might imply. Most psychological functions are at least partially interdependent. Therefore, desirable changes in one area of behavior may produce beneficial modifications in other areas not directly involved in the treatment program. Often, as will be shown later, a relatively circumscribed problem has widespread social consequences; and a change in a specific deviant behavior can have pervasive psychological effects.

If the major aim of therapy is the modification of phenomenological events, the empirical question remains how such changes can be made



most successfully. Some theorists hold that behavior is essentially a byproduct of phenomenological experiences; therefore they select the latter events as the major subject matter of therapeutic conversations. According to social-learning theory, self-descriptions and phenomenological experiences are partly by-products of behaviorally produced outcomes. People, for example, who lack the social and vocational competencies required for meeting environmental demands, and who resort to defective coping strategies will undoubtedly engender numerous adverse consequences, which will give rise to despondency, negative self-evaluations, and other subjective distresses. Similarly, those who derive inadequate positive reinforcement from their vocational and interpersonal activities will experience feelings of purposelessness and alienation. From a social-

learning perspective, phenomenological and other internal events can be more effectively modified through behavioral changes and the feedback from resulting consequences than through conventional interview procedures.

A laboratory study conducted by Keister (1938) illustrates how phenomenological events can be altered by feedback from a series of carefully guided mastery experiences. The author selected a group of children who exhibited extreme maladaptive tendencies, including withdrawal, destructiveness, sulking and crying, and expressions of feelings of helplessness when faced with problem-solving tasks. Keister did not obtain ratings of the children's self-concepts, but it is highly probable that, as a result of repeated failure experiences, these children would eventually evaluate themselves in negative terms. In the treatment program the children solved a

series of graded problems that grew progressively more difficult, thus ensuring a gradual build-up of skill in coping with increasingly difficult tasks. In addition, the experimenter consistently rewarded the children's successful solutions and persistent task-oriented behavior. A pre- and post-test comparison of the children's responses to exceedingly difficult tasks showed that the success experiences were highly effective in replacing the formerly maladaptive tendencies with constructive, confidence-producing behavior.

Because cognitive and attitudinal changes have rarely been systematically assessed in behaviorally oriented programs, it is generally assumed that these types of treatment approaches alter only specific behavioral functioning. Several experiments have recently been designed especially to provide empirical evidence of the affective and cognitive consequences of behavioral

changes. Bandura, Blanchard, and Ritter (1969) found that elimination of phobic behavior was accompanied by marked attitudinal changes toward previously feared situations. In addition, disturbing emotional responsiveness not only toward the phobic stimulus but toward situations beyond the specifically treated condition was substantially reduced. In a preliminary study, Wahler and Pollio (1968) similarly demonstrated that behavioral changes produced in a boy through selective social reinforcement altered favorably his evaluations of himself and others. As might be expected, his evaluation of events closely related to the treatment objectives changed most markedly.

Not only are self-attitudes and feeling states fundamentally affected by behaviorally produced experiences, but a favorable change also gains the person acceptance and increased social status

(Hastorf, 1965). The positive social feedback engendered by behavioral competence can thus have important phenomenological consequences. In subsequent chapters research evidence will be presented showing that cognitive and affective modifications can be achieved more successfully through planned behavioral change than through attempts to alter internal events directly. The relative superiority of a behaviorally oriented approach probably stems from the fact that a basic change in behavior provides an objective and genuine basis by which one feels self-respect, self-confidence, and dignity.

### *INSIGHT AS A THERAPEUTIC OBJECTIVE*

Most traditional approaches to psychotherapy consider the achievement of insight or self-awareness to be a prerequisite for the production of widely generalized and enduring behavioral

changes. Therefore, development of insight constitutes one of the primary objectives of interview strategies. For this reason, among the numerous technical issues discussed in expositions of psychotherapeutic procedures, those pertaining to timing and depth of interpretations, methods for channeling verbalizations into areas assumed to be conflict-laden, strategies for handling clients' resistances, and explanations of the possible symbolic significance of verbal and nonvocal responses have all received considerable attention.

In therapeutic practice, the development of insight is largely accomplished by therapists repeatedly interpreting the verbal, affective, and social responses that their clients report or exhibit within the treatment setting. A number of authorities have proposed rules for the optimal level of interpretive responses for promoting

insights. According to Rogers (1951), for example, clients will engage in progressively deeper self-exploration provided that therapists label only the feelings that are expressed more or less explicitly. On the other hand, Fenichel (1941) and other advocates of psychoanalytical procedures recommend that therapists proceed slightly beyond what the client is able to accept and experience emotionally at any given time. By contrast, Klein (1960), Berg (1947), and Rosen (1953), among others, contend that rapid and fundamental personality changes can be achieved only by deep interpretations of internal processes of which the client is completely unaware. Research bearing on this issue (Collier, 1953; Dittmann, 1952; Harway, Dittmann, Raush, Bordin, & Rigler, 1955) has been mainly concerned with attempts to scale the depth of therapists' interpretive responses, which are typically rated

on a continuum ranging from superficial restatements of clients' remarks to suggestions of causal relationships and psychological events that are entirely foreign to clients' views of themselves. In addition, client- therapist verbal interchanges have been occasionally analyzed in an effort to establish relationships between variations in therapists' interpretive responses and different verbal indices of therapeutic progress (Colby, 1961; Dittmann, 1952; Frank & Sweetland, 1962; Speisman, 1959).

Despite the lack of consensus regarding optimal interpretive procedures, it is generally assumed that through skillful labeling of repressed strivings, which manifest themselves in various derivative forms, the unconscious determinants of the client's behavior are gradually made conscious. After these unconscious events are brought into awareness they presumably cease to



function as powerful instigators of behavior, or they become more susceptible to cognitively mediated control. Hence it is believed that with the achievement of insight, flexible, voluntarily guided behavior replaces automatic, indiscriminate responding.

Although the acquisition of insight is considered an essential goal of treatment and supposedly results in a wide variety of beneficial effects, insight has never been adequately defined (Zilboorg, 1952), nor has the manner in which it supposedly mediates behavioral change ever been clearly specified or demonstrated. Apart from the difficulties of defining insight, the history of a client's behavior is rarely known, and the reconstructed content of both historical and contemporary events is highly influenced by the therapist's suggestive probing and selective reinforcement of the client's verbalizations. Thus,

as Marmor (1962) has pointed out, schools of psychotherapy have emerged with their own favored set of hypothetical internal agents, and their own preferred brand of insight; these can be readily confirmed by self-validating interview procedures. For these reasons, psychotherapists of differing theoretical orientations repeatedly discover their preferred psychodynamic agents, but are unlikely to find evidence for the underlying causes emphasized by their theoretical rivals:

But what *is* insight? To a Freudian, it means one thing, to a Jungian another, to a Rankian, a Horneyite, an Adlerian or a Sullivanian, still another. Each school gives its own particular brand of insight. Whose are the correct insights? The fact is that patients treated by analysts of all these schools may not only respond favorably, but also believe strongly in the insights which they have been given. Even admittedly 'inexact' interpretations have been noted to be of therapeutic value!

Moreover, the problem is even more complicated than this; for, depending upon the point of view of the analyst, the patients of each school seem to bring up precisely the kind of phenomenological data which confirm the theories and interpretations of their analysts! Thus each theory tends to be self-validating. Freudians elicit material about the Oedipus Complex and castration anxiety, Adlerians about masculine strivings and feelings of inferiority, Horneyites about idealized images, Sullivanians about disturbed interpersonal relationships, etc. The fact is that in so complex a transaction as the psychoanalytic therapeutic process, the impact of the patient and the therapist upon each other, and particularly that of the latter upon the former, is an unusually profound one. What the analyst shows interest in, the kinds of questions he asks, the kind of data he chooses to react to or to ignore, and the interpretations he makes, all exert a subtle but significant suggestive impact upon the patient to bring forth certain kinds of data in preference to others [Marmor, 1962, p. 289].

The above assessment of the arbitrariness of

psychotherapeutically derived insights finds some support in the findings of an experiment conducted by Heine (1953), in which clients who had been treated by psychoanalytic, Rogerian, and Adlerian therapists were asked to specify the factors responsible for their personality changes. Although clients treated by therapists of these different theoretical affiliations reported a similar degree of improvement, they tended to account for their behavior in terms of the explanation favored by their respective therapists. These results, and other findings that will be cited later, strongly indicate that the content of a particular client's insights and emergent "unconscious" could be predicted more accurately from knowledge of his therapist's theoretical belief system than from the client's actual social-learning history.

*INSIGHT: A SOCIAL-CONVERSION OR A SELF-  
DISCOVERY PROCESS?*

In the preceding section it was suggested that interpretive activities might be more accurately represented as a direct social influence rather than as a process involving delicate levitation of repressed forces from the region of the client's unconscious mind. Psychotherapists' reports that their clients have achieved self-awareness generally mean, in behavioral terms, that clients have learned to label social stimulus events, past and present causal sequences, and their own responses in terms of the theoretical predilections and language of their psychotherapists. In traditional practice insight primarily represents a form of self-evaluative behavior that is conditionable and extinguishable, as are nonverbal performances. By subsuming the development of insight under the broad framework of *social persuasion*, much of the knowledge discovered by experimental social

psychology can be applied to the understanding of how therapists induce, alter, and control their clients' self-insights—even though, in some cases, therapists subscribe to such idiosyncratic beliefs about the conditions governing human behavior as to strain the broad limits of rationality.

Several factors of the treatment situation contribute to the process of persuasion, particularly as it applies to changes in the manner in which clients construe their own actions and what determines them. As noted in the preceding chapter, because of initial selectivity and later attrition of cases during the course of treatment, the types of people who seek out and remain in psychotherapy display personal attributes similar to those of persons who, in laboratory studies of conformity, attitude change, and conditionability, are highly amenable to social influence. In addition to the selection of persuasible clients, therapists,

by virtue of their advanced training and expertise, are usually accorded high prestige and credibility. Views expressed by sources of high credibility generally exert a stronger influence on recipients' opinions than those of low credibility sources (Berg & Bass, 1961; Bergin, 1962; Hovland, Janis, & Kelley, 1953). Interpretations made by prestigious psychotherapists are, therefore, more likely to alter clients' opinions of themselves than to produce disbelief or to destroy their confidence in the therapist.

A closely related factor that seems both to augment attitudinal conformity and to reduce discrediting of the psychotherapist is the ambiguity of the psychotherapeutic situation. Usually the goals of treatment, if discussed in any detail, are stated only in general terms; clients are given only general instructions about the nature of the therapeutic task and the manner in which the

objectives are to be realized. The therapist often deliberately strives to remain ambiguous in order to facilitate inappropriate generalization of maladaptive patterns of behavior toward the therapist. Most important, the subject matter of interpretations is primarily concerned with inferences about unobservable internal processes rather than with more objective behavioral events. Clients would, of course, have no difficulty in ascertaining the validity of therapists' judgments of factual matters; however, clients have little objective basis for evaluating whether they possess Oedipus complexes, repressed hostilities, latent homosexual urges, oral-sadistic drives, and other esoteric motivational forces whose identification is further complicated by the fact that they are often inferred from both the high incidence and the absence of the same behavior. Studies of social compliance (Asch, 1952; Berg &



Bass, 1961) have abundantly documented that persons can be more easily induced to accept the opinions of others on subjective and unfamiliar matters than on interpretations of events for which objective cues are available. Having altered their judgments, subjects typically underestimate the extent of their compliance and the role of social influence in modifying their opinions (Rosenthal, 1963).

The fact that psychological treatment promises relief from the distress occasioned by the client's behavioral difficulties also works against his quick dismissal of insights proffered by the psychotherapist, who is often sought out as a last resort. Distress generally facilitates persuasion, especially if solutions allegedly effective at stress reduction are also made available (Chu, 1966; Dabbs & Leventhal, 1966).

In attitude change research the opinions selected for modification have generally involved social rather than highly personal matters. A study by Bergin (1962) of interpretations as persuasive communications demonstrates that the variables shown to control social attitudes play a similarly influential role in altering the self-attitudes that often concern psychotherapists.

In making interpretations, a therapist communicates information about the client which is somewhat discrepant with the client's view of himself. The controversy regarding the optimal depth of interpretation might therefore be recast in the following form: Can a person's self-attitudes be altered more rapidly by presenting him with a progressive series of mildly discrepant communications slightly beyond what the client is willing to accept, or by confronting him with extremely divergent communications as

recommended by Rosen (1953) and Klein (1960)?

The search for an optimal level of interpretation may be a fruitless pursuit since, according to persuasion theory, the effectiveness of varying degrees of discrepant communications is highly dependent upon the attributes, credibility, social prestige, and power of the communicator. Therapists to whom are attributed low credibility and prestige, for example, may be relatively ineffectual in producing attitudinal changes even though they faithfully adhere to interpretations that are only moderately at variance with their clients' beliefs about themselves. On the other hand, when psychotherapists are considered to be a source of high credibility, and possess power to reward and punish the client's behavior, then "deep" interpretations may be highly influential in shaping clients' self-insights. Perhaps this is the

reason why Rosen, who exercises considerable rewarding and coercive power over his psychotic patients, finds that deep interpretations produce rapid attitudinal changes, whereas similar interpretive strategies by therapists who lack control over their patients' environment generally prove ineffectual. The interactive effects of these different social variables upon conforming self-evaluations are most clearly illustrated in Bergin's study (1962), which manipulated independently both credibility of the communicator and degree of incongruity of interpretations.

In the high credibility condition, college students were seen individually in the Psychiatry Department of a medical center by the experimenter, who was ostensibly director of a depth personality assessment project. To enhance further the verisimilitude of the situation, students were escorted by the clinic receptionist to the

experiment room, which was furnished with, among other things, psychophysiological recording equipment, an impressive array of medical and psychiatric tomes, and a large portrait of Sigmund Freud.

After the students had rated their interpersonal characteristics on several rating scales, they were administered an extensive battery of psychological tests which were presented as valid measures of underlying personality dynamics. In a session conducted several days later, the experimenter informed the students that, according to results of the depth assessment, their level of self-understanding was quite accurate on all the traits rated except for the area of masculinity-femininity. They then received, according to random assignments, interpretations that depicted them as either moderately, highly, or extremely more feminine (masculine for girls)

than they judged themselves to be. Later the students rated themselves again so that changes in their self-evaluations could be assessed. Students in the low credibility condition likewise completed the initial self-ratings, received one of the three levels of discrepant interpretations concerning their masculine status, and then repeated the self-evaluation. In these cases, however, the judgments were made in a decrepit basement office by a scrawny youngster on the basis of casual observation.

The results, presented graphically in Figure 2-1, show that under high credibility conditions the more divergent the interpretation the greater the change in self-attitudes; on the other hand, when interpretations issued from a source of low credibility, the amount of attitude change decreased with increasing discrepancy between the judgments of the participants.

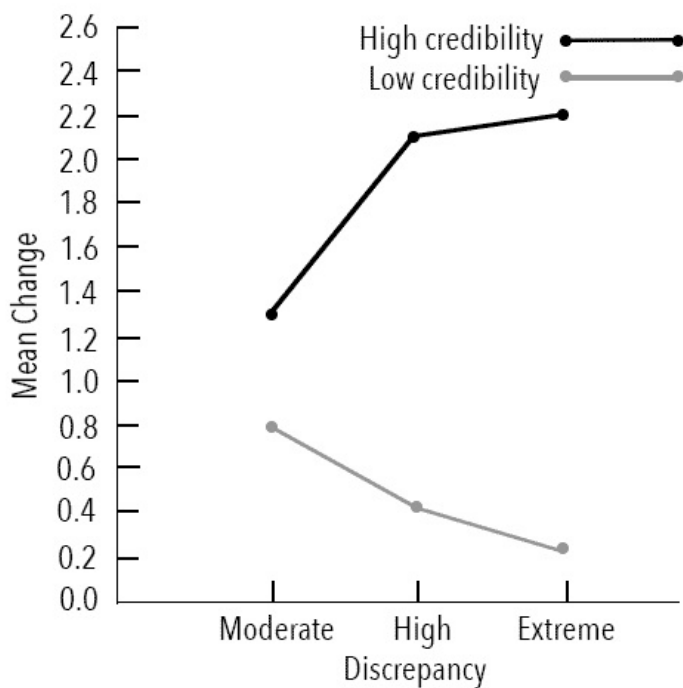


Figure 2-1. Mean change in self-appraisal considered most acceptable by subjects as a function of credibility of the communicator and degree of discrepancy of the interpretation from subjects' view of themselves. Bergin, 1962.

Although the generality of the self-evaluative conforming behavior cannot be determined from the findings of the foregoing study, it nevertheless suggests strongly that people are willing to adopt erroneous underlying attributes suggested to them by prestigious specialists. It might be supposed that the persuasive efforts of psychotherapists would be especially effective because the same interpretations are made repeatedly during prolonged treatment and are directed not only toward assumed unconscious determinants but also toward clients' resistances against the prompted insights.

Suggestive communications offered by prestigious agents under conditions of ambiguity and high personal distress may be well suited for imparting insights to clients, but after the self-beliefs have been socially induced their maintenance is strongly governed by existing



conditions of reinforcement. Results of innumerable verbal conditioning experiments and analyses of client-therapist interactions, which have been cited earlier, furnish ample evidence that psychotherapists selectively reinforce conformity to their own opinions about the causes of behavior, and that clients can readily secure their therapists' appreciation and approval by reiterating the appropriate insights.

It would seem from the findings presented above that interpretive psychotherapies may primarily represent a conversion of the client to the therapist's point of view rather than a process of self-discovery. It is not surprising, therefore, that insight can be achieved without helping the client with the difficulties for which the client originally sought help. There is no reason to expect, for example, that a stutterer converted to Freudianism, Jungianism, Existentialism,

Behaviorism—or to any other theoretical system—will begin to speak fluently. His stuttering is more likely to be eliminated by necessary relearning experiences than by the gradual discovery of predetermined insights. To account for the lack of relationship between insight and social behavior, different varieties of insights have been distinguished. On the one hand, there is “intellectual insight,” which is believed to exist when cognitive responses are present but the accompanying social or emotional behavior is absent. Then there is “emotional insight” which is typically defined in terms of the effects which it presumably causes: If the client exhibits behavioral changes, he has achieved emotional insight; if he fails to modify his social behavior then he has simply acquired intellectual insight.

While the view that insight is a prerequisite of behavioral change is widely accepted, some

theorists (Alexander, 1963) have considered insight to be a consequence of change, rather than its determinant. That is, as anxieties are progressively reduced through the permissive conditions of the treatment situation, formerly inhibited thoughts are gradually restored to awareness. In recent years, however, many therapists have become increasingly skeptical about the value of insights regarding hypothetical psychodynamic events. The ethical and empirical questions that have been raised with respect to interpretive modes of therapy would apply equally to behavioral approaches if these used interview procedures similarly to teach clients to construe their psychological functioning in behavioral terms and did not effect any significant changes in the personality problems for which the clients sought aid.

Although insight into presumed psychic

determinants of interpersonal responses is of questionable validity and has little effect on behavior, considerable experimental evidence, which will be reviewed in the concluding chapter, suggests that awareness of response-reinforcement contingencies can markedly influence overt performances. Unlike the arbitrary and enigmatic nature of psychodynamic events, the controlling function of environmental contingencies is readily demonstrable and amenable to testing and verification.

### *BEHAVIORAL OBJECTIVES AND “POSITIVE MENTAL HEALTH”*

Discussions of psychotherapeutic and socialization practices customarily decry the lack of consensus among social scientists as to what constitutes “positive mental health.” Underlying this concern for agreement is the belief that behavioral change principles cannot be judiciously

applied until an adequate conception of mental health and the nature of the “good life” is developed. The fact that a universal conception of mental health would require value standardization is usually obscured by the abstract nature of the discourse. On the other hand, when the issues are cast in a more specific form, it becomes apparent that the search for uniform criteria of “good” functioning is not only a fruitless pursuit; it is also one that would raise serious ethical concerns if standards were ever officially adopted and imposed on the populace. Who is to prescribe what is the “healthiest” occupational activity, the “healthiest” political or religious belief, the “healthiest” style of living, the “healthiest” form of marital or social relationships, or the “healthiest” artistic preferences?

People differ widely across social groups and over time in their views of the ideal pattern of life.

Indeed, as noted in the introductory chapter, modes of behavior that are judged abnormal and a source of distress in one social group may be regarded as commendable and emulative in another subculture. In a society that values individualism the “good life” may assume a wide variety of acceptable patterns. Although some common elements might be abstracted from the heterogeneity, the distillation would most likely yield a set of general bland attributes. Social scientists can make their greatest contributions in the ethical domain by assessing the consequences of different styles of life. Such information would provide others with useful bases for making value choices.

### **Decision Processes in the Selection of Objectives**

A frequent objection to behavioral approaches is that the people are often unaware that their

behavior is being modified, and verbal conditioning studies are typically cited as evidence. This portrayal of controlling power may be flattering, but in fact it is exceedingly difficult to influence the behavior of another person without his awareness and concurrence. Indeed, as has been pointed out elsewhere (Bandura, 1962), verbal conditioning experiments actually demonstrate the relative *weakness* of subtle influence attempts. In the typical verbal conditioning study, the response class to be modified is not identified for the subject and the experimenter purposely employs subtle verbal and nonverbal reinforcers (e.g., “good,” “right,” nods, smiles, and other gestures) so that the subject will have difficulty in recognizing the response-reinforcement contingency. Under these circumstances subjects who discern the basis upon which reinforcement is administered

produce incremental changes in the critical responses, whereas those who remain unaware generally show no conditioning effects at all. If, on the other hand, the experimenter were to select attractive incentives and specified what behavior would be rewarded, it is safe to predict that subjects would produce the desired responses at asymptotic level almost instantaneously.

The psychological fascination with subtle and disguised social influence processes, and the comparative ineffectiveness of these procedures, are also demonstrated by the short-lived interest in experimentation on subliminal perception. The initial studies generated considerable public alarm that behavioral scientists had paved a freeway to the “unconscious mind,” thus providing hidden persuaders of Madison Avenue a means of trafficking in subliminal messages that could shape and control the interests, attitudes, and



social actions of persons without their awareness. This picture is further reinforced by popular descriptions of the potentialities of psychological control conjuring up macabre associations of *1984* and *Brave New World*, in which people are dominated by occult technocrats who possess awesome methods of behavioral control. Some state legislatures even enacted laws designed to control the potential controllers. Research evidence, as usual, introduced a sobering note into extravagant fantasies. Investigations of subliminal stimulation clearly showed that stimuli at supraliminal levels have more pronounced effects upon subjects' behavior than stimuli that are below the threshold of awareness (McConnell, Cutler, & McNeil, 1958). Subliminal stimulation either produces no behavioral changes or, at most, weak and fragmentary ones.

Nevertheless, the conduct of change programs

in shadowy ambiguity is sometimes recommended on the assumption that persons' awareness of influence attempts will not only arouse interfering counter control behavior, but will also reduce the potency of reinforcing stimuli. Although these assumptions may have some validity in situations where the influence attempts are designed primarily to induce persons to perform actions contrary to their interests and value systems (e.g., advertising, political persuasion), they are less appropriate for situations in which the learner selects his own objectives. In fact, awareness of and commitment to specified outcomes that are shared by agents of change tend to enhance positive evaluation of change agents' efforts and to facilitate the acceptance of their influence.

#### *DECISIONAL RESPONSIBILITIES OF CHANGE AGENTS AND CLIENTS*

The ethical implications of behavioral control

cannot be discussed meaningfully without specifying the scope of decision-making behavior of both the client and the change agent. In any type of social influence enterprise there exist two basic decision systems. One set of decisions pertains to the selection of goals; these decisions require value judgments. The second set of decisions, which involve empirical issues, relates to the selection of specific procedures for achieving selected goals. In the latter domain the agent of change must be the decision-maker, since the client is in no position to prescribe the learning contingencies necessary for the modification of his behavior. But though the change agent determines the means by which specified outcomes can be achieved, the client should play a major role in determining the directions in which his behavior is to be modified. To the extent that the client serves as the primary decision-maker in the value

domain, the ethical questions that are frequently raised concerning behavioral control become pseudo issues.

When the client wishes to change a limited range of deviant behavior, the objectives are self-evident and the change agent can proceed with treatment as soon as the learning experiences appropriate to the desired outcomes have been specified. More often, however, because clients are uncertain about the benefits they hope to derive from treatment, or because their goals are stated too broadly, the identification of relevant outcomes must constitute the initial objective of the program. In such instances it is necessary to conduct a thorough behavioral analysis in order to identify the social conditions governing the client's response patterns and the range of behavioral and situational modifications likely to promote the desired psychological changes. After possible

alternative courses of action and their probable consequences are specified, the client can participate in the selection of his treatment outcomes. This decisional process is not unlike medical diagnosis in which a patient desires relief from pain but cannot specify the cause of pain or a remedy for it. Rather, the therapist must detect the factors producing pain and indicate the chances for immediate and long-term benefits from alternative remedial interventions. Once the patient has selected one of the alternatives, he not only expects but demands that the therapist manipulate and control events to accomplish the desired relief. A physician who fails to assume full control over the progress of treatment may be charged with malpractice. On the other hand, serious ethical problems would arise if a patient consulting a medical specialist were promptly subjected to radical surgical or medical

procedures without his concurrence based on a clear understanding of the manner in which his physical status was to be modified. Although the preceding example has focused on the ethical implications of therapeutic work, analogous decision processes and value issues are involved when a person consults lawyers, architects, bankers, and other societal agents who possess the power to influence by reason of their expertise. Until recently the major obstacle to serious use of a decisionmaking approach such as this in behavioral change endeavors is that the treatment alternatives were limited and the outcomes uncertain.

It would be naive to assume that agents of change play no role whatsoever in the determination of goals. In psychotherapy, for example, in order not to influence the client's choice of behavior, a therapist would be forced to

conduct with aloof objectivity an exhaustive survey of all possible alternative outcomes from which the client could make his choice. In practice, however, only a few feasible objectives are likely to be examined and compared. The psychotherapist's value orientation may partly determine not only the range and types of outcomes selected for consideration but also the relative emphasis given to the probable consequences associated with the various alternatives. Thus some encroachment on the client's decision-making primacy in the value domain is inevitable. If the change agent's value preferences are explicitly identified as his personal biases and not represented to the client as scientific truths, this problem is much less serious. If values were stated more explicitly, clients would be more inclined to select therapists on the basis of similar moral commitments and

might well be more receptive to the therapist's influence.

Occasionally a person may select goals that the change agent has no desire to promote because the intended outcomes conflict with his basic values or he lacks skill in the methods necessary for attaining the chosen objectives. In such cases he may refuse to participate in the treatment or, if the desired changes seem appropriate, he may refer the client elsewhere.

Special problems in goal selection also arise when persons are confused over their own values and purposes, or when they exhibit severe deficits in reality-oriented behavior and low capacity for communication. It might be questioned whether such persons are capable of selecting meaningful objectives for themselves. Fairweather, Sanders, Maynard, and Cressler (1969) have shown in their



work with chronic schizophrenics that such individuals can successfully participate in the selection of personal goals provided the alternatives are defined in comprehensible terms of performance and the clients are given responsibility for decision-making that affects their daily lives. Some grossly deviant persons, of course, may refuse to seek modifications of any sort. Often they constitute threats to themselves or to the welfare of others. If such persons are unwilling to assist in selecting treatment goals, it does not mean that one should abandon treatment attempts. Sometimes it is necessary to assume that the person cannot exercise sufficient control over his behavior and to hope that, with appropriate interventions, the person will reach a state of aware self-interest in which he will desire further modifications within a broad range of societally tolerated alternatives.

### *REDEFINITION OF CLIENT'S OBJECTIVES*

The preceding discussion has been mainly concerned with problems created by uncertainties about what people wish to gain from treatment. A far more prevalent, but largely ignored ethical issue, is raised by therapists' unilateral redefinition of the goals presented by the clients. This revision of the therapeutic contract occurs most frequently in approaches that focus major attention not on the behavior of the client but on inferential inner states. The therapist usually takes the position that the client does not know what his real problems are and that they can be revealed only through a protracted series of interpretive interviews; the client's behavioral problems are normally underrated as superficial derivatives of underlying conditions that are believed to be most effectively modified through the achievement of insight. After restructuring the central problem

the therapist pursues objectives that are often quite different from those originally sought by the client. If the client has been sufficiently convinced that he is resolving more generic problems his behavioral difficulties assume secondary importance in the course of therapy, so that even if they are not modified, he supposes the contract to be fulfilled. Insight has been attained.

A therapeutic contract involves an obligation on the part of the therapist to modify the problems presented by his clients. A therapist may market a particular brand of insight without raising ethical objections provided he adds two important qualifiers: First, he informs his clients that the insights they are likely to attain reflect his own belief system and second, that attaining them is apt to have little impact on the behavioral difficulties that brought the client to treatment. It is evident from the results of interpretive

approaches that a therapist who leads his clients to believe that insight will alleviate their behavioral malfunctioning is unlikely to accomplish the changes he implies.

### *SEQUENTIAL DECISION-MAKING*

Decisions about objectives are not irrevocable. Consequences resulting from behavioral changes representing the initially selected outcomes may lead to revision of subsequent aims. The initial objectives should be assigned a provisional status in order to provide the client opportunities to experiment with new behaviors and to experience their consequences; then he can decide whether he wishes to pursue further the chosen course of action. Moreover, during the course of treatment, previously ignored areas of behavioral functioning may become more important than original goals. Whenever this situation arises the treatment

program can be easily reoriented toward new objectives and appropriate learning experiences. By retaining flexibility in the selection, sequencing, and timing of objectives, the treatment program remains highly sensitive to feedback from resultant changes and the therapist is less inclined to invoke an extended moratorium on behavioral modification while he searches for the fundamental objective. Preoccupation with the accurate identification of *the* core problem reflects a remnant of the revivalist view of psychopathology, according to which diverse interpersonal problems are presumed to stem from a central pathogenic experience. It is further believed that interpretive revival and abreaction of the core trauma will result in rapid and widely generalized personality changes.

Contrary to the latter view, investigations of the social-learning process (Bandura & Walters,

1963) provide considerable evidence that deviant behavior is typically controlled by diverse variables and is not generated by a single pathogenic agent. Successful treatment therefore requires the selection and attainment of a variety of specific objectives rather than a single omnibus outcome. The extent to which changes in one system of behavior affect other areas of functioning will be partly determined by the similarity of the two systems and by the degree to which the altered behavior brings the client into contact with new role models and with new patterns of reinforcement.

#### *SELECTION OF CHANGE AGENTS AND THE LOCUS OF TREATMENT*

After the goals and requisite learning experiences have been established, another set of decisions arises in the selection of change agents who, by virtue of their specialized training or close

relationship with the client, are best suited to implement treatment procedures. In traditional clinical practice, changes in behavior are characteristically effected by professional psychotherapists in office settings, mainly through the modification of verbal-symbolic contents. Although the decided preference for artificial environments and symbolic substitutes for naturally occurring events has been theoretically justified, these treatment conditions were probably adopted more for the therapists' convenience than for any proven therapeutic superiority. In fact, results of controlled studies demonstrate that deviant behavior can be modified more thoroughly and more expeditiously by treating actual events rather than their symbolic equivalents (Bandura, Blanchard, & Ritter, 1969), and that change programs conducted in natural settings are far superior to

similar ones administered in psychiatric institutions (Fairweather, et al., 1969).

It follows from principles of generalization that the optimal conditions for effecting behavioral changes, from the standpoint of maximizing transfer effects, would require people to perform the desired patterns of behavior successfully in the diverse social situations in which the behavior is most appropriate. On the other hand, when treatment is primarily centered around verbal responses expressed in an invariant, atypical context one cannot assume that induced changes will necessarily generalize to real-life performances to any great extent.

Issues regarding the locus and content of treatment are closely linked with the choice of change agents. From a social-learning perspective those who have the most intensive contact with



the client, if given appropriate training, can serve as the most powerful agents of change. Their potential efficacy derives from the fact that in such positions they exercise considerable control over the very conditions that regulate the behavior. Successful applications of this general principle are provided in new approaches to child therapy in which parents are utilized in the treatment of their own children's behavior (Hawkins, Peterson, Schweid, & Bijou, 1966; O'Leary, O'Leary, & Becker, 1967; Patterson, Ray, & Shaw, 1968; Risley & Wolf, 1966; Russo, 1964; Wahler, Winkel, Peterson, & Morrison, 1965; Williams, 1959).

In a well-designed program a thorough behavioral analysis is first conducted to identify the social conditions that maintain the various behavior disorders. Next the deviant response patterns to be eliminated and the desirable behaviors to be strengthened are clearly specified.

The parents are then given a detailed description of how they must alter their characteristic ways of reacting to their child's behavior to achieve therapeutic changes. This typically involves a reversal of parents' differential reinforcement practices. Whereas the child's deviant behavior previously commanded attention and his desirable behavior received little special notice, the parents are advised now to ignore or to reinforce negatively his aberrant behavior and to respond positively to the forms of behavior they wish to promote. In the case of deficit problems (Lovaas, 1966), a program of graduated modeling is also devised, while in fear-motivated disorders (Bentler, 1962) a graduated reexposure to threatening situations is implemented by the parents.

It should be noted in this context that attempts to modify behavior through giving advice, have an

extended history, mainly negative. Its paltry outcomes probably result from the nature of the advice given and from the fact that instructions alone are of limited effectiveness unless they are combined with other procedures that help to alter and to support parental behavior. Parents may understand principles of change but may have difficulty translating them into appropriate actions. To alleviate this problem, not only treatment strategies are sketched out in considerable detail, but initially the recommended practices are modeled by the person planning the program while parents observe the interactions. After the procedures have been adequately demonstrated and some control of the child's deviant behavior has been achieved, the parents gradually take over the therapeutic function. The parents are directly supervised until they attain proficiency in handling their child's behavior

without external direction.

Detailed instructions, combined with demonstrations and supervised practices, are effective means of instituting changes in parental behavior, but favorable outcomes are necessary to ensure adherence to the recommended practices. The problem of parental reinforcement is particularly critical in initial stages of treatment when withdrawal of the positive consequences that had been periodically evoked by the child's deviant behavior often produces a temporary increase in such behavior. During this period it may be necessary to provide extensive social support to maintain the desired parental behavior. In later phases beneficial changes in the child serve as a natural and powerful source of reward for the parents' efforts so that the new familial patterns become reciprocally reinforcing and thereby self-sustaining. At times it may be difficult

for parents to carry out the necessary programs because of social conditions, independent of the child, that affect their behavior. Such hindrances can be most successfully overcome by modifying the conflicting influences impinging upon the parents.

When a child's deviant behavior is sufficiently prevalent to occur frequently within a clinical setting, parents may gain facility through supervised consultation sessions on treatment strategies that they can apply at home. On the other hand, in instances where the major behavioral problems are not readily reenacted at a clinic, the change process can be most effectively initiated in the home with the parents functioning as therapists. The feasibility of the home treatment approach has been demonstrated by Hawkins et al. (1966).

Their illustrative case involved a four-year-old boy who aggressively demanded constant attention, often behaved in a physically abusive and belligerent manner, and generally was extremely difficult to manage. After a baseline measurement of the incidence of hyperaggressive behavior was made, the treatment program was initiated. The mother was instructed to go about her usual household activities and whenever her son displayed behavior that required handling, the observer would signal one of three modes of response. Each time the boy behaved reprehensibly the mother was advised either to tell him to stop or to place him in his room for a brief time. In contrast, when he behaved commendably the mother was encouraged to express interest and approval. As shown in Figure 2-2, the new reinforcement practices produced a marked decrease in undesirable behavior. In the

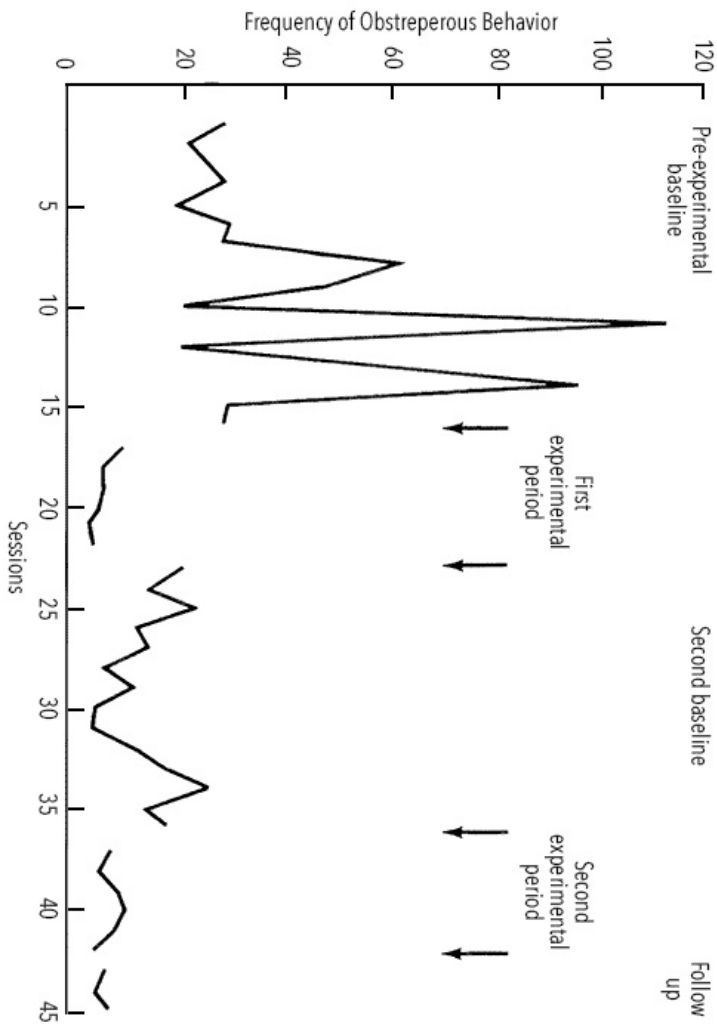


Figure 2-2. Number of 10-second intervals in which the boy displayed objectionable behavior during each one-hour session. Hawkins et al., 1966.

next phase the mother was asked to resume her original practices of chastising undesirable behaviors while ignoring desirable ones, but she found it difficult to recapture her former style. The therapeutic contingencies were again reinstated, and a follow-up study was conducted approximately a month later in which the mother-child interaction was observed for several sessions without any further guidance. The overall results show not only that the mother maintained the favorable changes in her son's behavior long after the supervising therapist had dropped out of the picture, but that the boy generally behaved in a more considerate and affectionate manner, which contrasted markedly with his former indiscriminate belligerence. As Hawkins points out, a major benefit of enlisting parents as change agents is that, having gained facility in effective treatment methods, they can successfully apply



them to future developmental problems in a variety of circumstances.

Although the discussion thus far has concentrated on the implementation of change programs by parents, the same general principles apply when other change agents perform similar functions. The direction of change must be defined in terms of observable behavior; the methods for achieving these outcomes must be clearly specified and preferably modeled; enough guidance must be provided to ensure success; and, if necessary, special favorable consequences of carrying out the recommended practices must be arranged. Behavioral approaches, as will be shown later, use teachers, nurses, peers, and students extensively as agents of change under the guidance of persons who possess professional knowledge and competencies in principles of behavioral change. To some extent, also,

individuals are called upon to function as their own change agents by learning how to manage contingencies and self-reinforcing consequences in order to modify their own behavior in desired directions. Nonprofessionals are frequently selected to implement change programs, not just as an economical way of alleviating serious manpower shortages, but because they are in a more advantageous position to effect better outcomes than professionals, who may have only brief contact with the client in an artificial setting in which the deviant behavior is infrequently displayed. When behavior is modified in the natural social environment by persons who normally exercise some control over the behavior, the problems of induced changes failing to generalize or to be sustained over time are much less likely to arise.

In many behavioral change programs, the

supervisory staff instructs change agents on how to implement selected procedures but fails to demonstrate the desired practices or to arrange for favorable consequences for their endeavors. Since new behavioral practices often require change agents to devote increased attention to the persons whose behavior is being modified and to discard old routines that had some functional value, some resistance is to be expected. In the initial phase of a project by Ayllon and Azrin (1964) designed to restore self-care in chronic schizophrenics it was noted, for example, that hospital attendants often failed to put the designated procedures into effect even though they had repeatedly been instructed to do so. Only after the attendants were provided feedback about their own performances and social consequences for their own behavior did they faithfully carry out the prescribed program.

The efforts of change agents are reinforced and maintained to some extent by positive experiences resulting from favorable changes in the behavior of their clients. In fact, some investigations (Hawkins et al., 1966; Wahler & Pollio, 1968) have encountered difficulties in employing the intrasubject replication design to dramatize the functional relationships between behavior and its consequences because, after experiencing the benefits from the behavioral changes they produced in their children, the parents were exceedingly reluctant to revert to their former reinforcement practices. However, when the required treatment conditions are difficult to create and to sustain, when the rate of improvement is relatively slow or evidence of progress has weak reinforcing value, it is desirable to provide adequate rewards for change agents as well. For example, to enhance the performance of

remedial instructors, Wolf, Giles, and Hall (1968) created a bonus monetary contingency that was linked to their students' productivity. The provision of appropriate supports for the agent's behavior, which is a critical aspect of behavioral change programs, is usually given little attention, with the consequence that essential procedures are halfheartedly or only sporadically applied. Any temporary suspension of contingencies, particularly in initial phases of a program, usually results in intermittent reinforcement of the undesired behavior. Therefore, treatment programs should not be attempted unless the appropriate contingencies will be systematically applied.

### *ETHICAL ISSUES IN SOCIAL AND CULTURAL CHANGE*

Most of the preceding discussion of goal selection was primarily concerned with the

achievement of behavioral changes on an individual basis. It is generally acknowledged that many of the problems confronting a society cannot be solved at an individual level but necessitate changes in entire social systems.

A variety of situations in which new contingencies are introduced on a society-wide basis raise important questions about the morality and decision processes guiding instituted changes. In cases involving widespread deviant behavior, such as delinquency or prevalent deficit conditions resulting from impoverished environments, major social changes are required for rehabilitation. For example, attempts to reduce the incidence of antisocial behavior by treating individual members who happen to be apprehended is a futile endeavor. Group problems demand group solutions. New social environments involving appropriate contingencies, role models, and

incentives, must be created if constructive modes of behavior are to be established and normatively sanctioned.

As knowledge accumulates about the causes and consequences of different social patterns and efficacious principles of behavioral change are further developed, a society gains the means not only of preventing the development of major social problems but also of realizing its avowed aims. Preventive programs and improved systems of social life entail new social practices, some of which may clash with the ideologies and traditions of various interest groups. Ethical controversies, therefore, inevitably arise over the types of social changes advocated as well as the methods by which they are to be achieved.

The value conflicts resulting from intrasocietal pressures for change occur on a much broader

scale in cross-cultural ventures in which one society strives to introduce new patterns of behavior into other societies occupying subordinate positions. In many cases advocated changes involving preventive medical practices, reorganization of economic and agricultural systems, creation of educational programs, and introduction of technologies that release people from demeaning labor have the potentiality for enriching social life and enhancing human freedom. Although the changes may have beneficial outcomes, they often require radical modifications of established beliefs and ways of living and are therefore understandably opposed. Moreover, intersocietal attempts at influence typically involve the export not only of better means of achieving cultural aims, but also of new ideologies and ultimate ends themselves. It is primarily the imposition of new moral standards,



some of which may be dysfunctional in the foreign setting, and the external prescription of how people within another culture should live their lives, that give rise to ethical concerns.

The decision processes and value issues involved in the selection of group goals are, in many respects, similar to those that operate at the individual level. First, it is necessary to decide what social objectives from among a variety of alternatives shall be pursued. The major question here is whether the authority for goal selection resides in a political or technological elite or is determined through informed collaborative participation of those whose lives will be affected by whatever policies are adopted. If one seriously subscribes to the value of group determination of social objectives, then more attention must be given to developing optimal methods for clarifying the consequences associated with different value

choices, for ascertaining collective preferences, and for resolving conflicts among different interest groups. In addition, adequate safeguards and social supports must be provided for warranted attempts at personal influence of social policies. Looking into the not-too-distant future, Hofstadter (1967), for example, envisions the use of computer technology, in which individual voting devices are connected to computers which assemble data almost instantaneously, to permit greater individual participation in society's decision-making whenever feasible.

Under extensive bureaucratization, which effectively obscures decision-making responsibilities, most people come to feel that they can exert little positive control over their environment. Consequently they are inclined to respond with grudging acquiescence to major social changes that are often guided by economic

considerations, slide rule decrees, and political expedience. Persons who are more actively inclined are often thwarted by the lack of readily accessible means of affecting decisions about the cultural priorities that should be promoted. However, the recent years have witnessed vigorous demands, particularly among the younger members of society, for a greater role in making decisions that affect the course and quality of their life.

Value conflicts arise not only in formulating common goals, but also in selecting methods for inducing preferred changes. In one way or another decisions are made about how much social objectives are advanced through coercive methods, through positive reinforcement of appropriate behaviors, or through provision of models for emulation who exemplify the desired behavioral patterns.

The notion of planned social change is likely to arouse in people's minds negative associations of regimentation, invasion of privacy, and curtailment of self-determination. In fact, as Benne (1949) and Mannheim (1941) have cogently argued, collectively planned social change, rather than being anti-individualistic, generally safeguards and extends human freedom. The need for social planning stems from the fact that, in many areas of behavioral functioning, people's outcome experiences are jointly determined by each other's actions. Thus if motorists did not have the benefit of traffic codes they would repeatedly obstruct and injure one another, whereas agreeing to a few sensible regulations greatly enhances their personal welfare and freedom of movement. Without some social controls over human behavior, personal freedoms would be continuously in jeopardy. Paradoxically, zealous

individualists often attack the very social institutions that are established to protect freedom of self-expression.

Problems of dysfunctional restraints often occur when social control is unwisely extended to areas of functioning that do not involve interdependent consequences to any significant degree. Unconventional beliefs, styles of living, and personal habits may be negatively sanctioned even though these activities, apart from their minor irritant value, rarely affect the welfare of others. Such pressures toward the standardization of life do constitute threats to personal freedom.

## Summary

One of the major obstacles to the development of effective change programs arises from the failure to specify precisely what is to be accomplished, or the more common practice of

defining the intended goals in terms of hypothetical internal states. When the aims remain ambiguous, learning experiences are haphazard, and whatever procedures are consistently applied tend to be determined more by personal preferences of change agents than by clients' needs.

The appropriate methods and learning conditions for any given program of behavioral change cannot be meaningfully selected until the desired goals have been clearly defined in terms of observable behavior. Rapid progress is further assured by designating intermediate objectives, which delineate optimal learning sequences for establishing the component behaviors of more complicated social performances. The necessity for behavioral specification of objectives is most clearly illustrated in the case of complex patterns of behavior which cannot be achieved with any

degree of success until they are analyzed into essential constituent functions.

The selection of goals involves value choices. To the extent that people assume major responsibility for deciding the direction in which their behavior ought to be modified, the frequently voiced concerns about human manipulation become essentially pseudo issues. The change agent's role in the decision process should be primarily to explore alternative courses of action available, and their probable consequences, on the basis of which clients can make informed choices. However, a change agent's value commitments will inevitably intrude to some degree on the goal selection process. These biases are not necessarily detrimental, provided clients and change agents subscribe to similar values and the change agent identifies his judgments as personal preferences rather than purported scientific prescriptions.

Much more serious from an ethical standpoint is the unilateral redefinition of goals by which psychotherapists often impose insight objectives (which mainly involve subtle belief conversions) upon persons desiring changes in their behavioral functioning.

Behavioral problems of vast proportions can never be adequately eliminated on an individual basis but require treatment and prevention at the social systems level. As behavioral science makes further progress toward the development of efficacious principles of change, man's capacity to create the type of social environments he wants will be substantially increased. The decision processes by which cultural priorities are established must, therefore, be made more explicit to ensure that "social engineering" is utilized to produce living conditions that enrich life and behavioral freedom rather than aversive human



effects. Control over value choices at the societal level can be increased by devising new systems of collective decision-making which enable members to participate more directly in the formulation of group objectives.

In discussions of the ethical implications of different modes of achieving personality changes, commentators often mistakenly ascribe a negative morality to behavioral approaches, as though this were inherent in the procedures. Social-learning theory is not a system of ethics; it is a system of scientific principles that can be successfully applied to the attainment of any moral outcome. In actuality, because of their relative efficacy, behavioral approaches hold much greater promise than traditional methods for the advancement of self-determination and the fulfillment of human capabilities. If applied toward the proper ends, social learning methods can quite effectively

support a humanistic morality.

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## Modeling and Vicarious Processes

One of the fundamental means by which new modes of behavior are acquired and existing patterns are modified entails modeling and vicarious processes. Indeed, research conducted within the framework of social-learning theory (Bandura, 1965a; Bandura & Walters, 1963) demonstrates that virtually all learning phenomena resulting from direct experiences can occur on a vicarious basis through observation of other persons' behavior and its consequences for them. Thus, for example, one can acquire intricate response patterns merely by observing the performances of appropriate models; emotional



responses can be conditioned observationally by witnessing the affective reactions of others undergoing painful or pleasurable experiences; fearful and avoidant behavior can be extinguished vicariously through observation of modeled approach behavior toward feared objects without any adverse consequences accruing to the performer; inhibitions can be induced by witnessing the behavior of others punished; and, finally, the expression of well-learned responses can be enhanced and socially regulated through the actions of influential models. Modeling procedures are, therefore, ideally suited for effecting diverse outcomes including elimination of behavioral deficits, reduction of excessive fears and inhibitions, transmission of self-regulating systems, and social facilitation of behavioral patterns on a group-wide scale.

Vicarious phenomena are generally subsumed

under a variety of terms. Among those in common usage are “modeling,” “imitation,” “observational learning,” “identification,” “copying,” “vicarious learning,” “social facilitation,” “contagion,” and “role-playing.” In personality theory identification has been most frequently differentiated from imitation on the assumed basis that imitation involves the reproduction of discrete responses, whereas identification involves the adoption of either diverse patterns of behavior (Kohlberg, 1963; Parsons, 1955; Stoke, 1950), symbolic representations of the model (Emmerich, 1959), or similar meaning systems (Lazowick, 1955). Sometimes the distinction is made in terms of differential antecedent or maintaining conditions as illustrated by Parsons’ (1951) view that “a generalized cathectic attachment” is a prerequisite for identification but is unessential or absent in the case of imitation. Kohlberg (1963), on the

other hand, reserves the term “identification” for matching behavior that is presumed to be maintained by the intrinsic reinforcement of perceived similarity, and employs the construct “imitation” for instrumental responses supported by extrinsic rewards. Others define imitation as matching behavior occurring in the presence of the model, reserving identification for performance of the model’s behavior in the latter’s absence (Kohlberg, 1963; Mowrer, 1950). Not only is there little consensus with respect to differentiating criteria, but some theorists assume that imitation produces identification, whereas others contend, with equally strong conviction, that identification results in imitation.

Unless it can be shown that vicarious learning of different classes of matching behavior is governed by separate variables, distinctions proposed in terms of the types of emulated

responses not only are gratuitous but also cause unnecessary confusion. Limited progress would be made in elucidating behavioral change processes if, for example, fundamentally different learning mechanisms were invoked, without adequate empirical basis, to account for the acquisition of one social response versus ten interrelated social responses that are arbitrarily designated as various aspects of a given role. Results of numerous studies to be reviewed later demonstrate that the acquisition of isolated matching responses and of entire behavioral repertoires is, in fact, determined by the same types of antecedent conditions. Further, retention and delayed reproduction of even discrete matching responses require representational mediation of modeling stimuli. There is also little reason to suppose, either on empirical or theoretical grounds, that the principles and

processes involved in the acquisition of matching responses that are performed in the presence of models are different from those later performed in their absence. Indeed, if the diverse criteria enumerated above were seriously applied, either singly or in various combinations, in categorizing modeling outcomes, most instances of matching behavior that have been traditionally labeled imitation would qualify as identification, and much of the naturalistic data cited as evidence of identificatory learning would be reclassified as imitation.

It is possible, of course, to draw distinctions among numerous descriptive terms based on antecedent, mediating, or behavioral variables. One might question, however, whether it is advantageous to do so, since there is every indication that essentially the same learning process is involved regardless of the generality of

what is learned, of the models from whom the response patterns are acquired, and of the stimulus conditions under which matching behavior is subsequently performed.

### *THREE EFFECTS OF MODELING INFLUENCES*

To elucidate vicarious influences it is essential to distinguish among different types of behavioral modifications resulting from exposure to modeling stimuli, but the differentiation must be made in terms of more fundamental criteria than those discussed above. There is abundant evidence (Bandura, 1965a; Bandura & Walters, 1963) that exposure to modeling influences has three clearly different effects, each of which is determined by a separate set of variables. First, an observer may acquire new response patterns that did not previously exist in his behavioral repertoire. In demonstrating this *observational learning* or

*modeling effect* experimentally, it is necessary for a model to exhibit novel responses which the observer has not yet learned to make and which he must later reproduce in a substantially identical form. Any behavior that has a very low or zero probability of occurrence in the presence of appropriate stimuli qualifies as a novel response.

Second, observation of modeled actions and their consequences to the performer may strengthen or weaken inhibitory responses in observers. These *inhibitory* and *disinhibitory effects* are evident when the incidence of imitative and nonmatching behavior is increased, generally as a function of having witnessed a model experience positive outcomes, and decreased by having observed a model undergo punishing consequences.

Third, the behavior of others often serves

merely as discriminative stimuli for the observer in facilitating the occurrence of previously learned responses in the same general class. This *response facilitation effect* can be distinguished from disinhibition and modeling by the fact that no new responses are acquired; disinhibitory processes are not involved because the behavior in question is socially sanctioned and, therefore, has rarely, if ever, incurred punishment. A simple example of social facilitation is provided in situations where a person gazes intently into a display window and passersby respond in a similar manner. In the following sections the variables and mediating processes governing these diverse modeling phenomena will be discussed at length. The ways in which modeling influences can be successfully used to effect individual and broader social changes will also be reviewed.



## Theoretical Conceptions of Observational Learning

The earliest formulations, dating back to Morgan (1896), Tarde (1903), and McDougall (1908), regarded modeling as an innate propensity. These instinctual interpretations dissuaded empirical investigations of the conditions under which modeling occurs; and because of the vehement reactions against the instinct doctrine, until recently even the phenomena subsumed under the concept tended to be either repudiated or widely ignored in theoretical explanations of learning processes.

### *ASSOCIATIVE AND CLASSICAL CONDITIONING THEORIES*

As the instinct doctrine fell into disrepute, a number of psychologists, notably Humphrey (1921), Allport (1924), and Holt (1931), accounted for modeling behavior in terms of associative principles. Temporal contiguity

between modeling stimuli and the imitator's matching response was considered to be a sufficient condition for the occurrence of imitation. According to Holt's conceptualization, for example, when an adult copies the response of a child, the latter tends to repeat the reiterated behavior, and as this circular associative sequence continues, the adult's behavior becomes an increasingly effective stimulus for the child's responses. If, during this spontaneous mutual imitation, the adult performs a response that is novel for the child, the latter will copy it. Piaget (1952) likewise depicted the modeling process as one in which the imitator's spontaneous behaviors serve initially as stimuli for matching responses by the model in alternating imitative sequences. Allport also viewed modeling phenomena as instances of classical conditioning of verbalizations, motor responses, or emotions to

matching social stimuli with which they have been contiguously associated.

The various associative theories isolated one of the conditions under which modeling cues may acquire eliciting functions for matching responses that already exist in the imitator's behavioral repertoire. These theories failed to explain, however, the psychological mechanisms governing the acquisition of *novel* responses during the model-observer interaction sequence. Moreover, demonstrations of observational learning in humans and animals do not ordinarily commence by having a model reproduce semi-irrelevant responses of the learner. In using modeling procedures to teach a mynah bird to talk, for example, the trainer does not engage initially in circular crowing behavior; rather, he begins by saying what he wishes to teach, which expressions clearly do not exist in integrated form in the bird's

vocal repertoire.

### *REINFORCEMENT THEORIES*

With the advent of reinforcement principles, theoretical explanations of learning shifted the emphasis from classical conditioning to instrumental response acquisition based on reinforcing outcomes. Theories of modeling phenomena similarly assumed that the occurrence of observational learning is contingent upon reinforcement of imitative behavior. This point of view was most clearly expounded by Miller & Dollard (1941) in the classic publication, *Social Learning and Imitation*. According to this formulation, the necessary conditions for learning through modeling include a motivated subject who is positively reinforced for matching the correct responses of a model during a series of initially random, trial-and-error responses.

The experiments conducted by Miller and Dollard involved a series of two-choice discrimination problems, in which a trained leader responded to environmental stimuli that were concealed from the subject so that he was dependent solely upon the cues provided by the model's behavior. The leader's choices were consistently rewarded and the observing subject was similarly reinforced whenever he matched these choice responses. This form of imitation was labeled by the authors "matched-dependent" behavior, because the subjects relied on the leader for relevant cues, and matched his responses. Based on this paradigm, it was shown that subjects readily learn to follow their respective models, and generalize copying responses to new situations, to new models, and to different motivational states.

While these experiments have been widely

accepted as demonstrations of imitative learning, they in fact represent only the special case of discrimination place-learning, in which the behavior of others provides discriminative stimuli for responses that already exist in the subject's behavioral repertoire. Indeed, had the relevant environmental cues been made more distinctive, the behavior of the models would have been quite irrelevant, and perhaps even a hindrance, to the acquisition process. By contrast, most forms of imitation involve *responses* rather than *place-learning*, in which subjects combine behavioral elements into new compound responses solely by observing the performance of social models, without any opportunity to perform the model's behavior at the time of exposure and without any reinforcers administered either to the models or to the observers (Bandura, 1965a). In the latter instance, modeling cues constitute an

indispensable aspect of the learning process. Moreover, since the reinforcement paradigm for observational learning requires the subject to perform the imitative response before he can learn it, the theory advanced by Miller and Dollard evidently accounts more adequately for the performance of previously learned matching responses than for their acquisition. Continuing with the example of language learning, in order for a mynah bird to learn the word “reinforcement” imitatively, it would first have to utter the word “reinforcement” in the course of random vocalization, match it accidentally with the trainer’s verbal responses, and secure a positive reinforcement. The conditions that Miller and Dollard assumed to be necessary for imitative learning severely limit the types of behavioral changes that can be attributed to the influence of social models.

The Skinnerian analysis of modeling phenomena (Baer & Sherman, 1964; Skinner, 1953), which is similar in many respects to the one originally advanced by Miller and Dollard, also specifies reinforcement as a necessary condition for observational learning. In this approach modeling is treated as a form of stimulus matching in which a person matches the stimulus pattern generated by his own responses to the appropriate modeling cues. The stimulus duplication is presumably achieved through a process of differential reinforcement. When matching behavior has been positively reinforced and divergent responses either nonrewarded or punished, the behavior of others comes to function as discriminative stimuli for reinforcement in controlling social responsiveness.

More recently, Gewirtz & Stingle (1968) have conceptualized modeling as analogous to the



matching-to-sample paradigm used to study discrimination learning. In this procedure a subject chooses from among a number of comparison stimuli one that shares a common property with the sample stimulus. Although modeling and matching-to-sample performances have some likeness in that both involve a matching process, they can hardly be equated. A person can achieve errorless choices on matching comparison operatic arias with a sample Wagnerian recital, but remain totally unable to perform the vocal behavior exhibited in the sample. Accurate stimulus discrimination is a precondition for, but not equivalent with, observational response learning. The major controversy among theories of modeling centers around the question of what are the necessary and sufficient conditions for the acquisition of new responses on an observational basis.

Under naturalistic conditions the behavior exhibited by models is typically reproduced in the absence of direct reinforcement. Consequently, theories that assume that some form of reinforcement is necessary for learning tend to invoke an intrinsic source of reinforcement. It is assumed that if accurate reproduction of modeling stimuli is consistently rewarded, behavioral similarity per se acquires secondary reinforcing properties. Thereafter a person will tend to display a high incidence of precisely imitative actions, which, because of their acquired reward value, will be strengthened and sustained even though they may never be externally reinforced.

Baer and his colleagues have conducted several experiments designed to demonstrate intrinsic reinforcement control of generalized imitation. In one study (Baer & Sherman, 1964) three imitative responses (head-nodding,

mouthings, and novel verbalizations) were established in young children by social reinforcement from a puppet who had explicitly instructed the subjects to match his modeled behavior. For a subgroup of children who showed an increase in imitative responding the puppet displayed nonreinforced bar-pressing interspersed among the other three rewarded matching responses. Under these conditions some of the children imitated bar-pressing in varying amounts even though this particular response was never positively reinforced. In order to further demonstrate the dependence of generalized imitation on direct reinforcement of other matching responses, social approval for imitative head-nodding, mouthings and novel verbalizations was discontinued with two subjects. This extinction procedure resulted in decreased imitative bar-pressing in one of the two children;

when reinforcement of the other three modeling responses was reinstated, imitative bar-pressing also reappeared.

The frequent references to the above study as providing evidence for the self-reinforcing function of response similarity overlook the fact that, even under explicit demands, the imitative behavior of one-third of the children was completely unaffected by the reinforcement operations, and that approximately half of the remaining children whose data are reported showed increments in reinforced imitative behavior but failed to perform the nonreinforced modeled response to any significant degree. Since reinforcement exerted no clearly predictable effects on the occurrence of generalized imitation it must have been largely determined by other unmeasured and uncontrolled variables.

Using similar reinforcement procedures with social models and more powerful incentives, Baer, Peterson, & Sherman (1967) were able to establish generalized imitateness in three severely retarded children who initially displayed a very low level of matching behavior (see Figure 3-1). After an extensive period of imitation-contingent reinforcement had markedly increased imitative behavior in these children (sessions 1-14), some matching responses could be effectively maintained without reinforcement by randomly interspersing them among positively reinforced imitations (sessions 15-26). However, both types of imitative responses rapidly declined when social approval and food were given to the children on a temporal basis rather than contingent upon imitative behavior (sessions 27-31). It was further shown that both types of matching responses could be quickly restored to

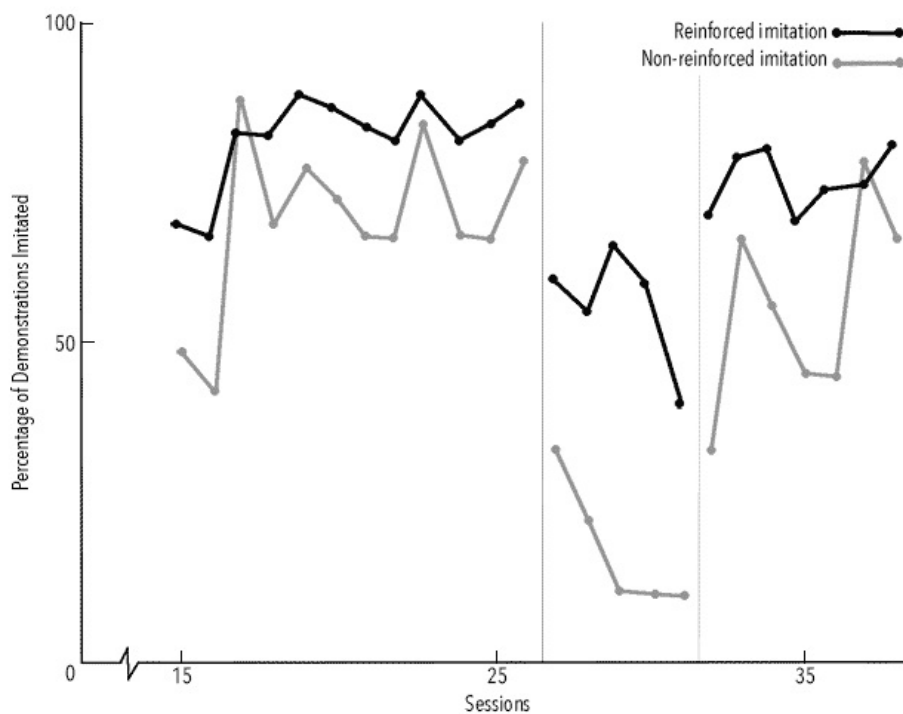


Figure 3-1. Percentage of reinforced and nonreinforced modeled responses reproduced by a child during periods when rewards were made contingent upon the occurrence of matching responses or upon the passage of a given period of time (DRO). Baer, Peterson, & Sherman, 1967.

their previously high level by reintroduction of response-contingent reinforcement (sessions 32-38).

It has been similarly demonstrated that schizophrenic children could acquire and maintain Norwegian words imitatively without any reinforcement (Lovaas, Berberich, Perloff, & Schaeffer, 1966), and preschool children imitated nonreinforced Russian words (Brigham & Sherman, 1968) as long as the children were rewarded for English words when correctly reproduced.

Although a generalized disposition to imitate the behavior of others can be developed by having different persons reinforce diverse types of responses in a variety of situations, this fact does not necessarily demonstrate that reinforcing properties inhere in behavioral similarity. If this

were in fact the governing mechanism, matching responses would not undergo abrupt and marked extinction (see Figure 3-1) the moment that reinforcement for the larger subclass of imitative responses is withdrawn, since one would not expect similarity cues to lose their rewarding value that suddenly. Rather, the intrinsic rewards arising from precise response duplication should sustain imitative behavior for some time even in the absence of externally administered reinforcers. Studies including more extensive variations in incentive conditions, indeed, show that generalized imitation is largely under incentive control rather than its inherently rewarding value. Berkowitz (1968) found that retarded children who were rewarded for imitative responses only at the end of the experimental session displayed a high rate of matching behavior as long as the food rewards



were present in the room. During sessions when food was not displayed, imitation dropped significantly; it was promptly re-established by introducing the sight of food.

It should be noted that the laboratory phenomenon that has been labeled “generalized imitation” involves only imitation across responses under conditions where subjects are instructed to repeat the experimenter’s behavior. A more stringent test of generalized imitation would include different models performing different responses in different social situations. An alternative explanation for this limited form of generalized modeling can be offered in terms of discrimination rather than secondary reinforcement processes. When a few nonrewarded, modeled responses are randomly distributed in a large number that are consistently reinforced, the two sets of responses cannot easily

be distinguished and are therefore likely to be performed with similar frequency. If, on the other hand, the discriminative complexity of the modeling task were reduced by having the model portray a series of reinforced responses, followed by the set of readily discriminable responses that are never reinforced, the observer would eventually recognize that the latter responses never produce positive outcomes and he would, in all likelihood, stop reproducing them. A discrimination hypothesis thus leads to a prediction which is opposite to that derived from the principle of secondary reinforcement. According to the acquired-reward interpretation, the longer imitative responses are positively reinforced, the more strongly behavioral similarity is endowed with reinforcing properties and, consequently, the greater should be the resistance to extinction of unreinforced matching responses.

In contrast, a discrimination hypothesis would predict that the longer the differential reinforcement practices are continued, the more likely the observer is to distinguish between rewarded and unrewarded imitative behaviors, with resulting rapid decline of unrewarded imitative responses.

The occurrence of generalized modeling is also probably determined in part by the invariant conditions under which laboratory tests are conducted. Reinforced and unreinforced responses are typically exhibited by the same model, in the same social setting, during the same period of time, and after subjects have been explicitly instructed to behave imitatively. On the other hand, under natural conditions, which are highly variable and more easily distinguishable, there appears to be considerable specificity to modeling behavior. If matching responses do, in

fact, automatically produce self-reinforcing effects, then people should display widespread reproduction of all types of behavior modeled by children, barbers, policemen, delinquents, professors and others. Actually, people tend to be selective in what they reproduce, suggesting that imitative performance is primarily governed by its utilitarian value rather than by inherent reinforcement derived from response similarity per se. In other words, the theory of generalized imitation explains more than has ever been observed. The issue would appear to be one of regulated performance rather than learning, since people do know how to match the behavior of others. Performance is primarily a function of anticipated outcome which, in turn, are partly determined by the degree of similarity between new situations and past situations in which particular responses have been reinforced.

Important treatment implications follow from the interpretations of generalized modeling, since in both cases the goal is to establish modeling tendencies that will not be restricted to the treatment setting but will generalize to other, more natural settings. On the basis of a secondary reinforcement hypothesis, the treatment program should include considerable imitation training under a generous schedule of reinforcement. The assumption made is that the more reinforcement a person experiences for behavioral matching, the more reinforcing it will become for him to imitate in any situation. On the basis of a discrimination hypothesis, on the other hand, the program would involve only as much reinforcement as is necessary to establish matching behavior, which would then be rewarded by different people in a variety of situations. Generalization is not assumed to occur automatically; it must be built

into the treatment program.

The Skinnerian analysis of modeling phenomena relies entirely upon the standard three-component paradigm  $S^d \rightarrow R \rightarrow S^r$ , where  $S^d$  denotes the discriminative modeled stimulus,  $R$  represents an overt matching response, and  $S^r$  designates the reinforcing stimulus. It is difficult to see how this scheme is applicable to observational learning in which an observer does not overtly perform the model's responses during the acquisition phase, reinforcers are not administered either to the model or to the observer, and the first appearance of the acquired response may be delayed for days, weeks, or even months. In the latter case, which represents one of the most prevalent forms of social learning, two of the events ( $R \rightarrow S^r$ ) in the three-term paradigm are absent during acquisition, and the third element ( $S^d$  or modeling stimulus) is typically absent from

the situation in which the observationally learned response is performed. Like the Miller and Dollard theory, the Skinnerian interpretation of modeling phenomena accounts satisfactorily for the control of previously learned matching responses by their stimulus antecedents and their immediate consequences. However, it fails to explain how a new matching response is acquired observationally in the first place. This occurs through covert, symbolic processes during the period of exposure to modeling stimuli, prior to overt responding or to appearance of any reinforcing events. Indeed, had the children in the experiment by Baer & Sherman been tested for vicarious learning immediately after the model had demonstrated the four critical responses, they could probably have reproduced the modeled repertoire without undergoing any imitation-contingent reinforcement. As will be shown later,

observational learning entails symbolic coding and central organization of modeling stimuli, their representation in memory, in verbal and imaginal codes, and their subsequent transformation from symbolic forms to motor equivalents. Because of the inferential nature of these basic processes, functional behaviorists are inclined to consider them of limited scientific interest. However, modeling phenomena must be analyzed in terms not only of response-selection variables but also of their mediational determinants before the necessary and sufficient conditions for modeling can be specified accurately.

In evaluating the role of reinforcement in modeling processes, it is essential to distinguish between response *acquisition* and *performance* because these events are determined by different variables. Numerous investigations, differing considerably in the choice of incentives, types of



matching responses, and age of the subjects, have shown that performance of matching responses is substantially increased by rewarding such behavior in either the model (Bandura, 1965a; Kanfer, 1965; Parke & Walters, 1967) or the subjects (Kanareff & Lanzetta, 1960; Lanzetta & Kanareff, 1959; Metz, 1965; Schein, 1954; Wilson & Walters, 1966); whereas imitative responsiveness is reduced by direct or vicarious punishment. However, results of an experiment bearing on the learning-performance distinction lend support to the theory that the acquisition of matching responses results primarily from stimulus contiguity and associated symbolic processes, whereas the performance of observationally learned responses will depend to a great extent upon the nature of reinforcing consequences to the model or to the observer.

In this study (Bandura, 1965b), children

observed a filmed model who exhibited a sequence of novel physical and verbal aggressive responses. In one treatment condition the model was severely punished following the display of aggressive behavior; in the second, the model was generously rewarded with delectable treats and lavish praise; the third condition presented no response consequences to the model. A post-exposure performance test of imitation revealed that the reinforcement contingencies applied to the model's responses resulted in differential degrees of matching behavior. Compared to subjects in the model-punished condition, children in the model-rewarded and the no-consequence groups spontaneously performed a significantly greater variety of imitative responses. Moreover, boys reproduced substantially more of the model's behavioral repertoire than girls, the differences being particularly marked in the model-punished

treatment (Figure 3-2).

Following the performance test, children in all three groups were offered highly attractive incentives contingent upon their reproducing the model's responses in order to promote performance of what they had acquired through observation. As shown in Figure 3-2, the introduction of positive incentives completely eliminated the previously observed performance differences, revealing an equivalent amount of learning among children in the model-rewarded, model-punished, and no-consequence; conditions. Similarly, the initially large sex differential, which in similar studies has been typically interpreted as reflecting a deficit in masculine-role identification by girls, was virtually eliminated.

Findings of the foregoing experiment, and others reviewed later, suggest that the behavior

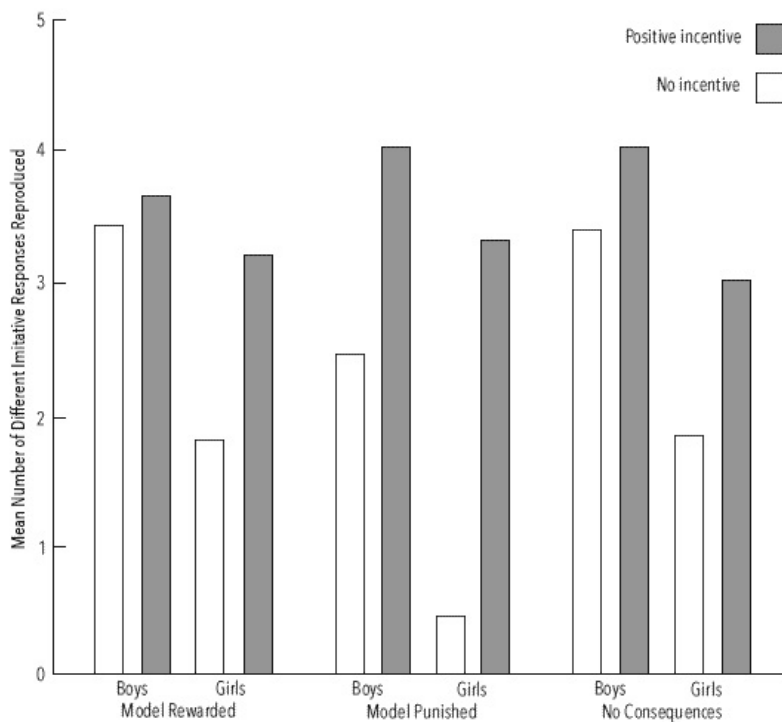


Figure 3-2. Mean number of different matching responses reproduced by children as a function of response consequences to the model and positive incentives. Bandura, 1965b.

analysis advocated by proponents of the Skinnerian approach might further advance understanding of modeling processes if it were separated into a learning analysis and a performance analysis. The learning analysis is concerned with the manner in which variables operating at the time of exposure to modeling stimuli determine the degree to which the modeled behavior is learned. The performance analysis, on the other hand, is concerned with factors governing persons' willingness to perform what they have learned.

Although there is ample evidence that reinforcing consequences can significantly alter the probability of future occurrence of preceding matching responses, consequent events can hardly serve as a precondition for the acquisition of responses that have already been performed. The major issue of whether reinforcement is a

prerequisite for observational learning can be most definitively resolved by the use of infrahuman subjects whose reinforcement history can be controlled. In a preliminary study, Foss (1964) found that birds will imitate unusual sound patterns played on a tape recorder in the absence of any prior reinforcement of matching responses. In human learning, under conditions where incentives are repeatedly given to a model as he displays an ongoing series of responses, observation of reinforcing outcomes occurring early in the sequence might be expected to increase the observer's vigilance in respect to subsequently modeled behavior. The anticipation of positive reinforcement for matching responses by the observer may, therefore, indirectly influence the course of observational learning by enhancing and focusing observing responses.

### *AFFECTIVE FEEDBACK THEORY*

Mowrer's (1960) sensory feedback theory of imitation similarly highlights the role of reinforcement but, unlike the preceding approaches which reduce imitation to a special case of instrumental learning, Mowrer emphasizes the classical conditioning of positive and negative emotions accompanying reinforcement to stimuli arising from matching responses. Mowrer distinguishes two forms of imitative learning in terms of whether the observer is reinforced directly or vicariously. In the former case, the model performs a response and at the same time rewards the observer. Through repeated contiguous association of the model's behavior with rewarding experiences, these responses gradually take on positive value for the observer. On the basis of stimulus generalization, the observer can later produce self-rewarding feedback experiences simply by reproducing as

closely as possible the model's positively valenced behavior.

In the second or "empathetic" form of imitative learning, the model not only exhibits the response but also experiences the reinforcing consequences. It is assumed that the observer, in turn, experiences empathetically the sensory concomitants of the model's behavior, and also intuitively his satisfactions or discomforts. As a result of this higher-order vicarious conditioning, the observer will be predisposed to reproduce the matching responses for the attendant positive sensory feedback.

There is substantial evidence (Bandura & Huston, 1961; Grusec, 1966; Henker, 1964; Mischel & Grusec, 1966; Mussen & Parker, 1965) that modeling can be augmented by increasing the rewarding qualities of a model or by having the



observer witness the model experience rewarding outcomes. These same studies, however, contain some contradictory findings with regard to the affective feedback theory. Even though a model's rewarding qualities are equally associated with the different types of behaviors he performs, modeling effects nevertheless tend to be specific rather than general. That is, model nurturance enhances the reproduction of some responses, has no effect upon others, and may actually diminish the adoption of still others (Bandura, Grusec & Menlove, 1967a). A limited study by Foss (1964), in which mynahs were taught unusual whistles played on a tape recorder, also failed to confirm the proposition that modeling is enhanced through positive conditioning. His mynahs imitated different sounds to the same extent whether they were played in the absence of any reinforcement or only when the birds were being

fed. It should be noted, however, that neither the Foss study nor the experiments cited earlier employed the type of temporal relationship between modeling cues and the administration of rewards that would be considered optimal for endowing the modeled events with affective valence.

In an elaboration of the affective feedback theory of imitation, Aronfreed (1968) has advanced the view that pleasurable and aversive affective states become conditioned to cognitive templates of a model's behavior. Imitative performances are presumed to be controlled by affective feedback from intentions and from proprioceptive cues generated during the performance of an overt act. This conceptualization of imitation is difficult to verify empirically because it does not specify in sufficient detail the characteristics of templates, the process

through which cognitive templates are acquired, the manner in which affective valences become conditioned to templates, or how the emotion-arousing properties of templates are transferred to intentions and to proprioceptive cues intrinsic to overt responses. There is some experimental evidence, however, that has important implications for the basic assumptions of feedback notions.

Feedback theories, particularly those that partly rely on controlling functions of proprioceptive cues, are seriously challenged by findings of curare-conditioning experiments in which animals are skeletally immobilized during aversive conditioning or extinction. These studies (Black, 1958; Black, Carlson, & Solomon, 1962; Solomon & Turner, 1962) demonstrate the occurrence of learning phenomena in the absence of skeletal responding and its correlated

proprioceptive feedback. Results of deafferentation studies (Taub, Bacon, & Berman, 1965; Taub, Teodoru, Ellman, Bloom, & Berman, 1966) also show that responses can be acquired, performed discriminatively, and extinguished even though sensory somatic feedback is surgically abolished by limb deafferentation. It would seem from these findings that the acquisition, integration, facilitation and inhibition of responses can be achieved through central mechanisms independently of peripheral sensory feedback.

It is also evident that rapid selection of responses from among a varied array of alternatives cannot be governed by proprioceptive feedback since relatively few responses could be activated, even incipiently, during characteristically brief pre-decision periods (Miller, 1964). In recognizing this problem,

Mowrer (1960) has conjectured that the initial scanning and selection of responses may occur primarily at the symbolic rather than at the action level.

Human functioning would be inflexible and unadaptive if responsiveness were controlled by affectivity inherent in the behavior itself. Because social responsiveness is highly discriminative, it is extremely doubtful that behavioral patterns are regulated by affective qualities implanted in behavior. To take aggression as an example, hitting responses directed toward parents, peers, and inanimate objects differ little, if at all; nevertheless, physically aggressive responses toward parents are generally strongly inhibited, whereas physical aggression toward peers is freely expressed (Bandura, 1960; Bandura & Walters, 1959). Moreover, in certain well-defined contexts, particularly in competitive, physical

contact sports such as boxing, people will easily initiate and maintain unattenuated, physically aggressive behavior. One would, therefore, predict more accurately the expression or inhibition of identical aggressive responses from knowledge of the stimulus context (e.g., church, athletic gymnasium), the object (e.g., parent, priest, policeman, or peer), and other cues that signify predictable consequences, than from assessment of the affective value of aggressive behavior. It has been amply demonstrated (Bandura, 1968) that the selection and performance of matching responses is mainly governed by anticipated outcomes based on previous consequences that were directly encountered, vicariously experienced, or self-administered.

Although feedback conceptions of modeling do not require a response to be performed before it can be learned, they nevertheless fail to explain

the acquisition of matching behavior when reinforcers are not dispensed either to the model or to observers. Moreover, a vast majority of the responses that are acquired observationally are not affectively valenced. This is exemplified by studies of observational learning of perceptual-motor tasks from filmed demonstrations (Sheffield & Maccoby, 1961) that do not contain positive or aversive stimuli essential for the classical conditioning of emotional responses. Mowrer has, of course, pointed out that sensory experiences not only classically condition positive or negative emotions, but also produce conditioned sensations or images. In most cases of observational learning images or other forms of symbolic representations of modeling stimuli may be the only important mediators. Sensory-feedback theories of imitation may therefore be primarily relevant to instances in which the modeled responses incur relatively

potent reinforcing consequences capable of endowing response-correlated stimuli with motivational properties. Affective conditioning should therefore be regarded as a facilitative rather than a necessary condition for modeling.

### *CONTIGUITY-MEDIATIONAL THEORIES*

When a person observes a model's behavior, but otherwise performs no overt responses, he can acquire the modeled responses while they are occurring only in cognitive, representational forms. Any learning under these conditions occurs purely on an observational or covert basis. This mode of response acquisition has accordingly been designated as no-trial learning (Bandura, 1965a), because the observer does not engage in any *overt responding trials*, although he may require multiple *observational trials* in order to reproduce modeled stimuli accurately. Several



theoretical analyses of observational learning (Bandura, 1962, 1965a; Sheffield, 1961) assign a prominent role to representational mediators that are assumed to be acquired on the basis of a contiguity learning process. According to the author's formulation, observational learning involves two representational systems—an *imaginal* and a *verbal* one. After modeling stimuli have been coded into images or words for memory representation they function as mediators for subsequent response retrieval and reproduction.

Imagery formation is assumed to occur through a process of sensory conditioning. That is, during the period of exposure, modeling stimuli elicit in observers perceptual responses that become sequentially associated and centrally integrated on the basis of temporal contiguity of stimulation. If perceptual sequences are repeatedly elicited, a constituent stimulus

acquires the capacity to evoke images (i.e., centrally aroused perceptions) of the associated stimulus events even though they are no longer physically present (Conant, 1964; Ellson, 1941; Leuba, 1940). Thus, for example, if a bell is sounded in association with a picture of an automobile the bell alone tends to elicit imagery of the car. Under conditions where stimulus events are highly correlated, as when a name is consistently associated with a given person, it is virtually impossible to hear the name without experiencing imagery of the person's physical characteristics. The findings of studies cited above indicate that, in the course of observation, transitory perceptual phenomena produce relatively enduring, retrievable images of modeled sequences of behavior. Later reinstatement of imaginal mediators serves as a guide for reproduction of matching responses.

The second representational system, which probably accounts for the notable speed of observational learning and long-term retention of modeled contents by humans, involves verbal coding of observed events. Most of the cognitive processes that regulate behavior are primarily verbal rather than visual. To take a simple example, the route traversed by a model can be acquired, retained, and later reproduced more accurately by verbal coding of the visual information into a sequence of right-left turns (e.g., RRLRR) than by reliance upon visual imagery of the itinerary. Observational learning and retention are facilitated by such codes because they can carry a great deal of information in an easily stored form. After modeled sequences of responses have been transformed into readily utilizable verbal symbols, later performances of matching behavior can be effectively controlled by

covert verbal self- directions.

The influential role of symbolic representation in observational learning is disclosed by a study (Bandura, Grusec, & Menlove, 1966) in which children were exposed to several complex sequences of modeling behavior on film, during which they either watched attentively, verbalized the novel responses as they were performed by the model, or counted rapidly while watching the film to prevent implicit verbal coding of modeling cues. A subsequent test of observational learning disclosed that children who verbally labeled the modeled patterns reproduced significantly more matching responses than those in the viewing-alone condition who, in turn, showed a higher level of acquisition than children who engaged in competing symbolization.

Further supporting evidence for the influence

of symbolic coding operations in the acquisition and retention of modeled responses is furnished by Gerst (1969). Subjects observed a filmed model perform complex motor responses varying in the ease with which they could be verbally coded. They were instructed to code the items into either vivid images, concrete verbal descriptions of the response elements, or convenient summary labels that incorporated the essential ingredients of the responses. Compared to the performance of control subjects who had no opportunity to generate symbolic mediators, all three coding operations enhanced observational learning (Figure 3-3). Concise labeling and imaginal codes were equally effective in aiding immediate reproduction of modeled responses and both systems proved superior in this respect to the concrete verbal form. However, a subsequent test for retention of matching responses showed

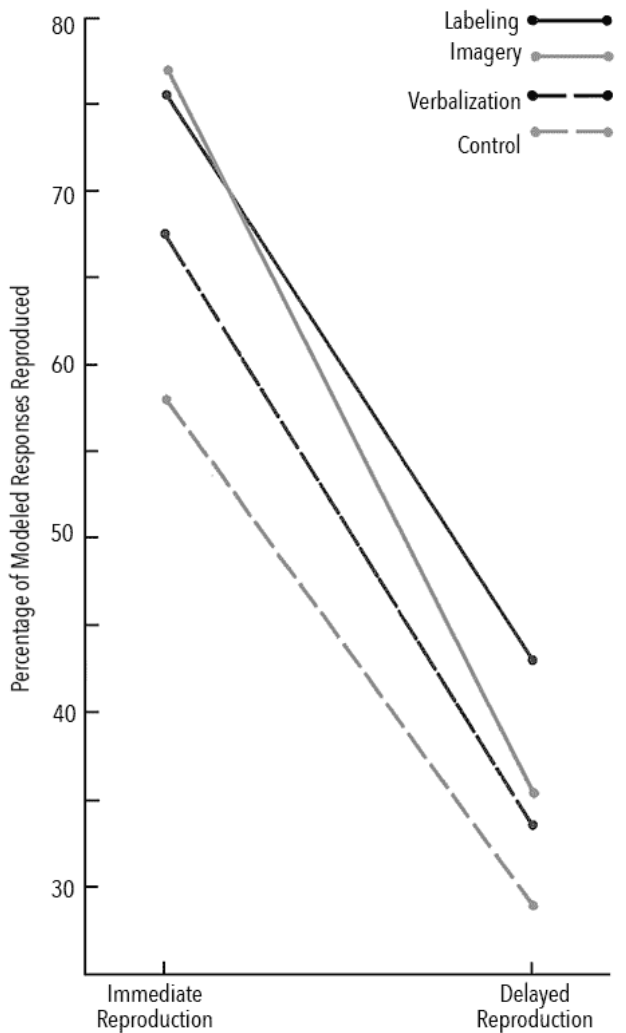


Figure 3-3. Percentage of modeled responses reproduced by control subjects and those who coded the modeled behavior as either images, concrete verbal descriptions, or summary labels for memory representation. Gerst, 1969.

concise labeling to be the best coding system for memory representation. Subjects in the latter conditions retained a significant amount of what they learned, whereas those who relied upon imagery and concrete verbalizations displayed a substantial loss of matching responses.

Results of a program of research using a nonresponse acquisition procedure (Bandura, 1965a) indicate that the organization of behaviors elements into novel patterns resembling modeled responses can occur at a central level without overt responding. The present theory assumes, however, that stimulus contiguity is a necessary, but not a sufficient, condition for observational learning. Modeling phenomena, in fact, involve several complexly interrelated subprocesses, each with its own set of controlling variables. A comprehensive theory of observational learning must therefore encompass the diverse subsystems

governing the broader phenomena. The main component functions that markedly influence the nature and degree of observational learning are discussed next.

### *ATTENTIONAL PROCESSES*

Since repeated contiguous stimulation alone does not always result in response acquisition, it is evident that additional conditions are required for the occurrence of observational learning. Simply exposing persons to distinctive sequences of modeled stimuli does not in itself guarantee that they will attend closely to the cues, that they will necessarily select from the total stimulus complex the most relevant events, or that they will even perceive accurately the cues to which their attention has been directed. An observer will fail to acquire matching behavior, at the sensory registration level, if he does not attend to,



recognize, or differentiate the distinctive features of the model's responses. To produce learning, therefore, stimulus contiguity must be accompanied by discriminative observation.

A number of attention-controlling variables, some related to incentive conditions, others to observer characteristics, and still others to the properties of the modeling cues themselves, will be influential in determining which modeling stimuli will be observed and which will be ignored. Selectivity of modeling stimuli may be partly a function of their inherent physical properties based on intensity, size, vividness and novelty. Of much greater importance for social learning, however, is the acquired distinctiveness of model attributes (Miller & Dollard, 1941). By being repeatedly rewarded for imitating certain types of models and not rewarded for matching the behavior of models possessing different

characteristics, persons eventually learn to discriminate between modeling cues that signify differential probabilities of reinforcement. Thus, models who have demonstrated high competence (Gelfand, 1962; Mausner, 1954a, b; Mausner & Bloch, 1957; Rosenbaum & Tucker, 1962), who are purported experts (Mausner, 1953) or celebrities (Hovland, Janis, & Kelley, 1953), and who possess status-conferring symbols (Lefkowitz, Blake, & Mouton, 1955) are likely to command more attention and to serve as more influential sources of social behavior than models who lack these qualities. Other distinctive characteristics, such as age (Bandura & Kupers, 1964; Hicks, 1965; Jakubczak & Walters, 1959), sex (Bandura, Ross, & Ross, 1963a; Maccoby & Wilson, 1957; Ofstad, 1967; Rosenblith, 1959, 1961), social power (Bandura, Ross, & Ross, 1963b; Mischel & Grusec, 1966), and ethnic status (Epstein, 1966), which

are correlated with differential probabilities of reinforcement, likewise influence the degree to which models who possess these attributes will be selected for emulation.

The affective valence of models, as mediated through their attractiveness and other rewarding qualities (Bandura & Huston, 1961; Grusec & Mischel, 1966), may augment observational learning by eliciting and maintaining strong attending behavior. At the social level, one's organizational affiliations and living circumstances, which affect associational networks and preferences, will also determine to a large degree the types of models to whom one is repeatedly exposed, and consequently, the modes of behavior that will be most thoroughly learned.

An adequate theory of vicarious learning must also explain why, under essentially identical

conditions of modeling stimulation, some persons display higher levels of response acquisition than others. There is suggestive evidence that characteristics of observers, deriving from their previous social-learning experiences, may be associated with different observational patterns. The extent to which modeled patterns are reproduced is significantly influenced by observer characteristics such as dependency (Jakubczak & Walters, 1959; Kagan & Mussen, 1956; Ross, 1966), self-esteem (de Charms & Rosenbaum, 1960; Gelfand, 1962; Lesser & Abelson, 1959), level of competence (Kanareff & Lanzetta, 1960), and socioeconomic and racial status (Beyer & May, 1968); and countless studies have shown that the effects of modeling stimuli are partly determined by the sex of observers. Persons who have been frequently rewarded for displaying matching behavior (Miller & Dollard, 1941; Schein, 1954)

are also apt to be most attentive to modeling cues. Finally, motivational variables and transitory emotional arousal significantly alter perceptual thresholds and in other ways facilitate, impede, and channel observing responses (Bandura & Rosenthal, 1966; Easterbrook, 1959; Kausler & Trapp, 1960).

It is difficult to evaluate from performance measures alone whether the effects of observer characteristics reflect differences in degree of observational learning or in willingness to perform what has been learned. Results of several studies employing a learning analysis of modeling (Bandura, Grusec, & Menlove, 1966; Grusec & Brinker, 1969; Maccoby & Wilson, 1957) disclose that observer characteristics can serve as determinants of observational learning.

Viewers' observing behavior can be effectively

enhanced and focused through arrangement of appropriate incentive conditions. Persons who are informed in advance that they will later be asked to reproduce a given model's responses and rewarded in terms of the number of elements performed correctly would be expected to pay much closer attention to relevant modeling stimuli than persons who are exposed to the same modeled events without any predisposition to observe and to learn them. The facilitative influence of incentive set on observational learning will be most operative under exposure to multiple models requiring selective attentiveness to conflicting cues. Indeed, incentive control of observing behavior can, in most instances, override the effects of variations in observer characteristics and model attributes. It should be noted, however, that in the present theory reinforcement variables, to the extent that they

influence the acquisition process, do so principally by augmenting and sustaining attentiveness to modeling cues.

In addition to attention-directing variables, stimulus input conditions (i e., rate, number, distribution, and complexity of modeling stimuli presented to observers) will regulate the acquisition of modeled responses to some extent. The observer's capacity to process information sets definite limits on the number of modeling cues that can be acquired during a single exposure. Therefore, if modeling stimuli are presented at a rate or level of complexity that exceeds the observer's receptive capabilities, observational learning will necessarily be limited and fragmentary. Under such conditions repeated presentations of the modeling stimuli would be required in order to produce complete and precise response matching.

Finally, the rate and level of observational learning will be affected by the discriminability of modeling stimuli. Modeled characteristics that are highly discernible can be more readily acquired than subtle attributes which must be abstracted from heterogeneous responses differing on numerous stimulus dimensions. In highly intricate response systems, such as language behavior, for example, children typically encounter considerable difficulty in acquiring linguistic structures because the identifying characteristics of different grammatical constructions cannot be readily distinguished within extremely diverse and complex utterances. However, when verbal modeling cues are combined with procedures designed to increase syntactic discriminability (Bandura & Harris, 1966; Lovaas, 1966a; Odom, Liebert, & Hill, 1968) relatively complicated linguistic patterns of behavior can be acquired and



modified observationally.

In therapeutic applications of modeling procedures observational learning is often retarded by discrimination failures arising from deficiencies in cognitive skills, sensory-motor handicaps, or faulty prior learning. In such cases a program of discrimination pretraining may greatly accelerate modeling processes. Winitz and Preisler (1965) have shown, for example, that children who learned to discriminate erroneous sounds from correct sounds that they had misarticulated subsequently displayed better imitative word learning than children who did not receive relevant discrimination pretraining.

### *RETENTION PROCESSES*

The discussion thus far has been concerned with sensory registration and symbolic coding of modeling stimuli. Another basic component

function involved in observational learning, but one that has been virtually ignored in theories of imitation, concerns the retention of modeled events. In order to reproduce social behavior without the continued presence of external modeling cues a person must retain the original observational inputs in some symbolic form. This is a particularly interesting problem in instances where persons acquire social patterns of behavior observationally and retain them over extended periods of time, even though the response tendencies are rarely, if ever, activated into overt performance until attainment of the age or social status at which the activity is appropriate and permissible.

There are a number of theoretical controversies regarding memory processes which will not be reviewed here since they fall beyond the scope of this book. The major questions are

whether memory traces are established in an incremental or an all-or-none fashion; whether there exists a dual or a single memory mechanism; and speculations about the biochemical and neurophysiological processes whereby transient neural after-effects of stimulation result in relatively permanent structural alterations in the central nervous system. Although memory mechanisms have not as yet been adequately explained, laboratory investigations have identified a number of conditions that facilitate retention, some of which have been shown to augment modeling performances.

Among the many variables governing retention processes, *rehearsal operations* effectively stabilize and strengthen acquired responses. The level of observational learning can, therefore, be considerably enhanced through practice or overt rehearsal of modeled response sequences,

particularly if the rehearsal is interposed after natural segments of a larger modeled pattern (Margolius & Sheffield, 1961). Of greater import is evidence that covert rehearsal, which can be readily engaged in when overt participation is either impeded or impracticable, may likewise enhance retention of acquired matching responses (Michael & Maccoby, 1961). Data are meager, however, on the types of responses that are most susceptible to strengthening through covert rehearsal. Several experiments involving a variety of tasks (Morrisett, 1956; Perry, 1939; Twining, 1949; Vandell, Davis, & Clugston, 1943), have shown that symbolic rehearsal of activities significantly improves their later performance. Such practice appears to be most effective in tasks that rely heavily upon symbolic functions.

The influential role of covert practice of modeled behaviors has received greatest

emphasis in Maccoby's (1959) account of the identification process. According to this view, controlling, nurturing, and caretaking activities require explicit reciprocal behaviors on the part of parents and children. Consequently, in the course of frequent mutually dependent interactions both participants learn, anticipate, and covertly rehearse each other's customary responses. In addition to the frequency and intimacy of social interactions, the degree of power exercised by the model over desired resources is considered to be an important determinant of the frequency of fantasy role-playing. In this theory, vicarious role-rehearsal primarily serves a defensive function; that is, in an effort to guide his behavior toward models who possess controlling power, a person will imagine different courses of action for receiving help or avoiding censure, and he will try to anticipate as accurately as possible the model's

probable responses to these approaches. On the other hand, there would be little incentive to prepare oneself for, or to practice covertly, the behavior of models who command no rewarding or punishing power.

Anticipatory implicit rehearsal of modeled responses may be supported to some extent by role reciprocity and threat from resource controllers, but it should be noted that persons will also be inclined to practice modeled responses that are effective in producing rewarding outcomes. Moreover, according to social-learning theory, the behavior of powerful models will be attended to, rehearsed, and reproduced even though observers have had no direct interaction with them, because their behavior is likely to have high utilitarian value. This is particularly true in the case of models who possess expert power in particular specialties. It would be unnecessary, for

example, for a novice to establish a complementary role relationship with a qualified automobile mechanic in order to master his skills through observation during apprenticeship training. Rehearsal behavior is undoubtedly governed by different types of incentive conditions, some of which may be entirely independent of the model whose behavior is being emulated.

It is generally assumed that the facilitative effects of rehearsal result not from sheer repetition, but rather from more active processes. The interpolation of rehearsal in intricate modeled sequences distributes the learning; this reduces loss through intraserial interference from other displayed elements (Margolius & Sheffield, 1961). Reproduction of matching responses, either on an overt or covert level, also provides the observer with opportunities to identify the response

elements that he has failed to learn and thus to direct his attention to the overlooked modeling cues during subsequent exposure (McGuire, 1961). Finally, periodic reproduction of modeled segments is likely to elicit and to sustain greater attentiveness to modeling stimuli than passive observation of lengthy, uninterrupted sequences of behavior (Hovland, Lumsdaine & Sheffield, 1949; Maccoby, Michael, & Levine, 1961).

*Symbolic coding operations*, to which reference was made earlier, are even more efficacious than rehearsal processes in facilitating long-term retention of modeled events. During exposure to stimulus sequence observers are inclined to code, classify, and reorganize elements into familiar and more easily remembered schemes (Bower, 1969; Mandler 1968; Paivio, 1969; Tulving, 1968). These coding devices may take various forms, such as representing stimulus elements in vivid imagery



translating action sequences into abbreviated verbal systems, and grouping constituent patterns of behavior into larger integrated units. The benefits accruing from rehearsal may, in fact, be largely attributable not to associative strengthening effects of repetition, but rather to coding and organizational processes operating during repeated enactments.

Decrements in retention often result primarily from interference or unlearning arising from either previously acquired contents or succeeding observational inputs. These interference processes are most influenced by the *rate*, *temporal distribution*, and *serial organization of stimulus inputs*. Under massed exposure conditions where modeling stimuli are presented in lengthy, uninterrupted sequences, substantial interference effects are created which not only impair retention, but may result in the development of

highly erroneous modeling responses. In one study (Bandura, Grusec, & Menlove, 1966), for example, children who had observed five relatively complex sequences of modeled responses during a single exposure sometimes erroneously combined elements from the different segments in subsequent behavioral reproductions. The amount of forgetting and interpattern intrusion will vary with the degree of similarity of behavioral elements in the various modeled sequences. On the other hand, modeling cues that are presented in smaller units and at spaced intervals are much less susceptible to loss through associative interference.

### *MOTOR REPRODUCTION PROCESSES*

The third major component of modeling phenomena involves the utilization of symbolic representations of modeled patterns in the form of

imaginal and verbal contents to guide overt performances. It is assumed that reinstatement of representational schemes provides a basis for self-instruction regarding the manner in which component responses must be combined and sequenced to produce new patterns of behavior. The process of representational guidance is essentially the same as response learning under conditions where a person behaviorally follows an externally depicted pattern, or is directed through a series of instructions to enact novel response sequences. The only difference is that, in the latter cases; performance is directed by external cues, whereas, in delayed modeling, behavioral reproduction is monitored by symbolic counterparts of absent stimuli.

The rate and level of observational learning will be partly governed, at the motor level, by the availability of necessary component responses.

Behavior patterns of high-order complexity are produced by combinations of previously learned components which may, in themselves, represent relatively intricate compounds. Modeled response patterns are most readily achieved when they require primarily the synthesis of previously acquired components into new patterns exhibited by models. On the other hand, observers who lack some of the necessary components will, in all probability, display only partial reproduction of a model's behavior. In such cases, the constituent elements first must be established through modeling and then, in a stepwise fashion, increasingly complex compounds can be acquired imitatively. Thus, for example, when a mute autistic child failed to imitate the word *baby*, the therapist modeled the component sounds, and after these elements were established through imitation, the child readily reproduced the word

*baby* (Lovaas, 1966b). As will be illustrated later, graduated modeling procedures have proved highly effective for modifying gross behavioral deficits.

In many instances modeled response patterns have been acquired and retained in representational forms but they cannot be reproduced behaviorally because of physical limitations. Few basketball enthusiasts could ever successfully match the remarkable performances of a towering professional player regardless of their vigilance and dutiful rehearsal.

Accurate behavioral enactment of modeling cues is also difficult to achieve under conditions where the model's performance is governed by subtle adjustment of internal responses that are unobservable and not easily communicable. An aspiring operatic singer may benefit considerably

from observing an accomplished voice instructor; nevertheless, skilled vocal reproduction is hampered by the fact that the model's laryngeal and respiratory muscle responses are neither readily observable nor easily described verbally. The problem of behavioral reproduction is further complicated in the case of highly coordinated motor skills, such as golf, in which a person cannot observe many of the responses he is making and must therefore primarily rely upon proprioceptive feedback cues. For these reasons, performances that contain many motor factors usually require, in addition to the guidance of a proficient model, some overt practice.

### *INCENTIVE AND MOTIVATIONAL PROCESSES*

A person may acquire and retain modeled events and possess the capabilities for skillful execution of modeled behavior, but the learning

may rarely be activated into overt performance if negative sanctions or unfavorable incentive conditions obtain. Under such circumstances, when positive incentives are introduced observational learning is promptly translated into action (Bandura, 1965b). Incentive variables not only regulate the overt expression of matching behavior, but they also affect observational learning by exerting selective control over the modeling cue to which a person is most likely to be attentive. Further, they facilitate selective retention by activating deliberate coding and rehearsal of modeled responses that have high utilitarian value.

It is evident from the foregoing discussion that observers do not function as passive video-tape recorders which indiscriminately register and store all modeling stimuli encountered in everyday life. From a social-learning perspective,

observational learning constitutes a complex multiprocess phenomenon in which absence of appropriate matching responses following exposure to modeling stimuli may result from failures in sensory registration, inadequate transformation of modeled events to symbolic modes of representation, retention decrements, motor deficiencies, or unfavorable conditions of reinforcement.

### **Establishment of New Response Patterns through Modeling**

Research and theoretical interpretations of learning processes have focused almost exclusively on a single mode of response acquisition which is exemplified by the operant or instrumental conditioning paradigm. In this procedure an organism is instigated, in one way or another, to perform responses, and approximations progressively closer to the



desired final behavior are selectively reinforced. It is generally assumed that complex human behavior is likewise developed under naturalistic conditions through this type of gradual shaping process.

Fortunately, for reasons of survival and efficiency, most social learning does not proceed in the manner described above. In laboratory investigations of learning processes experimenters usually arrange comparatively benign environments in which errors will not produce fatal consequences for the organism. In contrast, natural settings are loaded with potentially lethal consequences that unmercifully befall anyone who makes hazardous errors. For this reason, it would be exceedingly injudicious to rely primarily upon trial-and-error and successive approximation methods in teaching children to swim, adolescents to drive automobiles, or adults

to master complex occupational and social tasks. If rodents, pigeons, or primates toiling in contrived situations could likewise get electrocuted, dismembered, or bruised for errors that inevitably occur during early phases of learning, few of these venturesome subjects would ever survive the shaping process.

Apart from the question of survival, it is doubtful if many classes of responses would ever be acquired if social training proceeded solely by the method of successive approximations through differential reinforcement of emitted responses. The technique of reinforced shaping requires a subject to perform some approximation of the terminal response before he can learn it. In instances where a behavioral pattern contains a highly unusual combination of elements selected from an almost infinite number of alternatives the probability of occurrence of the desired response,

or even one that has some remote resemblance to it, will be zero. Nor is the shaping procedure likely to be of much aid in evoking the necessary constituent responses from spontaneously emitted behavior. It is highly doubtful, for example, that an experimenter could teach a mynah bird the phrase “successive approximations” by selective reinforcement of the bird’s random squeaks and squawks. On the other hand, housewives establish extensive verbal repertoires in their feathered friends by verbally modeling desired phrases either in person or by means of recordings. Similarly, if children had no exposure to verbalizing models it would probably be impossible to teach them the kinds of verbal responses that constitute a language. In cases involving intricate patterns of behavior, modeling is an indispensable aspect of learning.

Differential reinforcement alone can be

employed to evoke new patterns of behavior under conditions where responses are composed of readily available elements, stimuli exist that are capable of arousing actions that resemble the desired pattern, erroneous responsiveness does not produce injurious consequences, and the learning agent possesses sufficient endurance. Even in these cases the response acquisition process can be considerably shortened and accelerated by the provision of appropriate social models. This is particularly true if a pattern of behavior contains some elements that are rarely performed. For example, Luchins and Luchins (1966) found that college students made over a thousand errors and never did fully acquire a complicated sequence of behavior when the only response guidance they received was in the form of differential feedback of correctly performed elements. By contrast, subjects provided with

reinforced models learned the entire role behavior rapidly and were spared the exasperation and frustration evidenced by the trial- and-error group.

A similar problem arises if the presence of dominant pre-established behaviors precludes emission of the desired subordinate responses which seldom occur and, therefore, cannot be influenced by reinforcement (Bandura & Harris, 1966; Bandura & McDonald, 1963). An experiment designed to test whether moral judgments reflect a fixed developmental sequence, as suggested by Piaget's theory (1948), or are modifiable by social-learning variables illustrates the latter point. In one condition of the study (Bandura & McDonald, 1963), children who exhibited a predominant, subjective moral orientation either observed adult models who expressed objective moral judgments, or had no exposure to the models but were

positively reinforced whenever they expressed objective moral judgments that ran counter to their dominant evaluative tendencies. The provision of models was found to be highly effective in altering the children's judgmental responses (Figure 3-4). On the other hand, the reinforcement procedure alone effected little change in the children's judgmental orientation because of the relative absence of the desired behavior.

It is evident from informal observation that vicarious learning experiences and response guidance procedures involving both symbolic and live models are utilized extensively in social learning to short-circuit the acquisition process. Indeed, it would be difficult to imagine a culture in which the language, mores, vocational and avocational patterns, familial customs, and educational, social, and political practices were

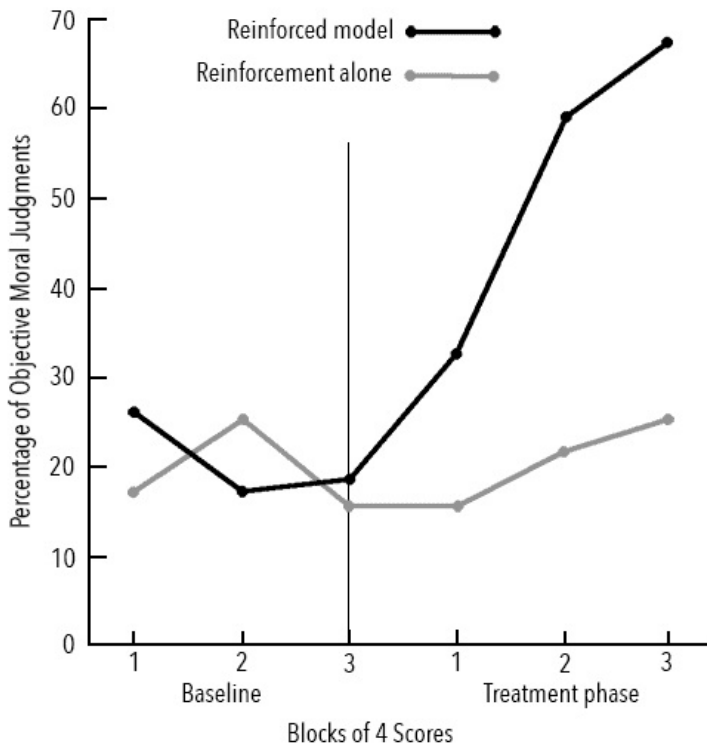


Figure 3-4. Mean percentage of objective moral judgment responses produced by subjective children who were either reinforced for objective judgments or exposed to reinforced models who exemplified an objective evaluative orientation. Plotted from the data of Bandura & McDonald, 1967.

shaped in each new member through a gradual process of differential reinforcement without the response guidance of models who exemplify the accumulated cultural repertoires in their own behavior. In social learning under naturalistic conditions responses are typically acquired through modeling in large segments or *in toto* rather than in a piecemeal, trial-and-error fashion.

Much social learning is fostered through exposure to *behavioral modeling cues* in actual or pictorial forms. However, after adequate language development is achieved, people rely extensively upon *verbal modeling cues* for guiding their behavior. Thus, for example, one can usually assemble relatively complicated mechanical equipment, acquire rudimentary social and vocational skills, and learn appropriate ways of behaving in almost any situation simply by matching the responses described in instructional



manuals. If the relevant responses are specified clearly and in sufficient detail, verbally symbolized models may have effects similar to those induced by analogous behavioral displays (Bandura & Mischel, 1965). The use of verbal forms of modeling makes it possible to transmit an almost infinite variety of values and response patterns that would be exceedingly difficult and time consuming to portray behaviorally.

The foregoing discussion is relevant to the issue of instructional control of behavior. In investigating the process of verbal control it is essential to distinguish between the instigational and the modeling functions of instructions. Instructions are most likely to result in correct performance when they both activate a person to respond and describe the appropriate responses and the order in which they should be performed. Little would be gained, for example, by simply

instructing a person who has had no prior contact with cars to drive an automobile. In studies comparing the relative efficacy of instructions and verbal modeling (Masters & Branch, 1969), both types of influences produce their effects through verbal modeling and they differ only in the explicitness with which the required responses are defined. As might be expected, greater performance gains are achieved when the desired behavior is clearly specified than when it must be inferred from a few examples.

The basic components in the development of complex integrated units of behavior are usually present in subjects' behavioral repertoires as products either of maturation or of prior observational learning and instrumental conditioning. For example, persons can produce a variety of elementary sounds as part of their natural endowment. By combining existing sounds

one can create a novel and exceedingly complex verbal response such as *supercalifragilisticexpialidocious*. Similarly, people are endowed with the capacity to move their fingers, but intricate sequential arrangements of movements are required to perform a piano concerto. While most of the elements in activities that are typically modeled in studies of observational learning are undoubtedly present, the particular combination of components in each response may be unique.

There have been numerous experiments of observational learning in infrahuman species dating back to the early studies of Thorndike (1898) and Watson (1908). These initial investigations, which were conducted at a time when interpretations of imitation as instinct were in vogue summarily dismissed the existence of observational learning on the basis of

disappointing results from a few animals tested under weak incentives and conditions that failed to ensure adequate observation of the demonstrator's performance. Subsequent studies conducted under more favorable experimental conditions have generally shown that primates can learn to solve manipulative problems (Hayes & Hayes, 1952) and animals of lower order can acquire discriminations (Bayroff & Lard, 1944; Church, 1957; Miller & Dollard, 1941; Solomon & Coles, 1954), lever-pressing responses (Corson, 1967), and escape behavior (Angermeier, Schaul, & James, 1959) and can master relatively complex tasks (Herbert & Harsh, 1944) more rapidly through observation than the original models achieved by trial-and-error or response-shaping techniques. For example, Warden and his associates (Warden, Fjeld, & Koch, 1940; Warden & Jackson, 1935) spent a considerable amount of

time in training rhesus monkeys by trial-and-error methods to master four problem-solving tasks in which the animals opened doors to obtain raisins by pulling chains, turning knobs, or manipulating latches in certain prescribed ways. Following training, the primate models manipulated the puzzle devices while naive monkeys, presented with a duplicate set of problems, observed the skilled demonstrators. The naive observers achieved instantaneous imitative solutions in 76 percent of the test trials! Adler and Adler (1968) found that puppies solve problems through observational learning soon after their eyes become functional. Results of several experiments (Darby & Riopelle, 1959; Herbert & Harsh, 1944) show that the increments in performance resulting from observation are not attributable to the fact that the model's demonstration may have simply drawn attention to relevant nonsocial

stimuli in the situation.

The animal studies, with few exceptions, have involved relatively simple responses that were reproduced either simultaneously or immediately after demonstration. Although relevant comparative data are lacking, it is highly probable that, unlike humans who are capable of acquiring observationally and retaining large integrated units of behavior, lower species would display a limited capacity for delayed reproduction of modeling stimuli due to sensory-motor deficiencies. Delayed imitation also requires some capacity for symbolization since the absent modeling stimuli must be retained in symbolic memory codes. As might be expected, the most striking evidence of observational response learning in animals comes from naturalistic studies of both immediate and delayed imitation of human responses by primates reared in human

families (Hayes & Hayes, 1952; Kellogg & Kellogg, 1933). Field studies of primate social behavior (Imanishi, 1957; Kawamura, 1963) likewise provide dramatic illustrations of the manner in which idiosyncratic patterns of behavior are acquired and transmitted to other members of the subculture through modeling. The propagation process is greatly influenced by pre-existing associational networks and the social status of the innovator.

The available cross-species data thus suggest that the rate and level of observational learning will be governed by the extent to which subjects possess the requisite *sensory capacities* for accurate receptivity of modeling stimuli, the *motor capacities* necessary for precise behavioral reproduction, and the *capacity for representational mediation and covert rehearsal*, which is crucial for successful acquisition and long-term retention of

extended complex sequences of behavior.

In the case of humans a wide variety of response patterns differing considerably in content, novelty, and complexity have been transmitted through modeling procedures under laboratory conditions. Among the diverse classes of behavior that have been developed are included stylistic response patterns (Bandura, Grusec, & Menlove, 1966; Bandura, Ross, & Ross 1963b), distinctive modes of aggressive behavior (Bandura, Ross, & Ross, 1963a; Hicks, 1965; Kuhn, Madsen, & Becker, 1967), dramatic play patterns (Marshall & Hahn, 1967), prosocial frustration reactions (Chittenden, 1942), and teaching styles (Feshbach, 1967; McDonald & Allen, 1967). At an even higher level of complexity, it has been shown that through exposure to the behavior of models persons can acquire standards for self-reinforcement and self-evaluative responses



(Bandura & Kupers, 1964; Bandura & Whalen, 1966; Bandura, Grusec, & Menlove, 1967b), conceptual behavior (Flanders & Thistlethwaite, 1969; Reed, 1966), moral judgmental orientations (Bandura & McDonald, 1963), self-imposed delay-of-gratification patterns (Bandura & Mischel, 1965), linguistic structures (Lovaas, 1966a), and distinctive phonetic variations in verbal behavior (Alyokrinskii, 1963; Hanlon, 1964).

#### *GENERALITY OF MODELING INFLUENCES*

It is widely assumed, on the basis of evidence that people often produce new responses which they have never formed or seen before, that learning principles cannot account for innovative behavior. Theories employing modeling principles have often been similarly questioned on the mistaken assumption that exposure to the behavior of others can produce at most mimicry of

specific modeled responses.

In most experimental investigations of modeling processes a single model exhibits a limited set of responses, and observers are subsequently tested for precise response duplication under similar stimulus conditions. These restricted experimental paradigms cannot yield outcomes that extend beyond the particular responses demonstrated. On the other hand studies employing more complex procedures indicate that innovative behavior, generalized behavioral orientations, and principles for generating novel combinations of responses can be transmitted to observers through exposure to modeling cues. Under conditions in which opportunities are provided to observe the behavior of heterogeneous models (Bandura, Ross, & Ross, 1963b), observers typically display novel patterns of behavior representing diverse

combinations of elements from the different models. Illustrations of the efficacy of modeling procedures for developing generalized conceptual and behavioral propensities are provided in studies designed to modify moral judgmental orientations (Bandura & McDonald, 1963) and delay-of-gratification patterns of behavior (Bandura & Mischel, 1965). In these experiments the models and observers respond to entirely different sets of stimuli in the social-influence setting. Tests for generalized modeling effects are conducted by different experimenters, in different settings, with the models absent, and with different stimulus items. The results disclose that observers respond to new stimulus situations in a manner consistent with the models' dispositions even though the subjects have never witnessed the models' behavior in response to the same stimuli.

In the higher-order form of modeling

described above the modeling stimuli convey information to observers about the characteristics of appropriate responses. Observers must abstract common attributes exemplified in diverse modeled responses and formulate a principle for generating similar patterns of behavior. Responses performed by subjects that embody the observationally derived rule are likely to resemble the behavior that the model would be inclined to exhibit under similar circumstances, even though subjects had never witnessed the model's behavior in these particular situations. The abstraction of rules from modeling cues is achieved through vicarious discrimination learning (Bandura & Harris, 1966), in which the model's responses containing the relevant attributes are reinforced, whereas those that lack the critical features are consistently nonrewarded.

Although modeling variables play an important

role in the development of most social behaviors, their position with respect to language learning is unique. Since individuals cannot acquire words and syntactic structures without exposure to verbalizing models, it is obvious that some amount of modeling is indispensable for language acquisition. However, because of the highly generative character of linguistic behavior, it is usually assumed that imitation cannot play much part in language development and production. The main argument, which is based on the mimicry view of modeling, is as follows: Children can construct an almost infinite variety of sentences that they have never heard. Consequently, instead of imitating and memorizing specific utterances that they have heard, children learn sets of rules, on the basis of which they can generate an unlimited number of grammatical sentences.

It is obvious that rules about grammatical

relations between words cannot be learned unless they are exemplified in the verbal behavior of models. An important question therefore concerns the conditions that facilitate abstraction of rules from verbal modeling cues. The principle underlying a model's varied responses can be most readily discerned if its identifying characteristics are repeated in responses involving a variety of different stimuli. If, for example, one were to place a series of objects on tables, on chairs, on boxes and on other objects, and simultaneously verbalized the common prepositional relationship between these objects, a child would eventually discern the grammatical principle. He could then easily generate a novel grammatical sentence if a toy hippopotamus were placed on a xylophone and the child were asked to describe the stimulus event enacted.

Unlike social responses which are often readily

acquired, language learning is considerably more difficult, because sentences represent complex stimulus patterns in which the identifying features of syntactic structures cannot be easily discriminated. The influential role of both modeling and discrimination processes in language development is shown by findings of an experiment (Bandura & Harris, 1966) designed to alter the syntactic style of young children who had no formal grammatical knowledge of the linguistic features that were manipulated. The grammatical constructions chosen to be modified were the prepositional phrase, which has a high base rate of occurrence, and the passive voice, which is grammatically more complex and rarely displayed by young children.

As might be expected, social reinforcement, even when combined with a strong attentional set to identify the characteristics of “correct”

sentences, was ineffective in increasing the use of passives in sentences generated by the children in response to a set of simple nouns. The majority of subjects did not produce a single passive sentence, and consequently, no responses occurred that could be reinforced. Nor were the children able, within the relatively brief exposure period, to discern the critical syntactic category simply from observing a model construct a series of passive sentences. In contrast, children generated significantly more passives when verbal modeling cues were combined with procedures designed to increase syntactic discriminability. The most powerful treatment condition was one in which the attentional set was induced, modeled passive constructions were interspersed with some sentences in the active voice so as to enhance differentiation of relevant grammatical properties, and both the model and the children were



rewarded for passive constructions. In the case of a syntactic category as common as prepositional phrases, reinforcement together with an active attentional set were effective in altering children's usage of prepositions, but modeling cues were not a significant contributory factor.

Further evidence for the influential role of modeling processes in language acquisition is provided by naturalistic studies involving sequential analyses of children's verbalizations and the immediately following parental responses. Such studies disclose that young children's speech is at best semi-grammatical; in approximately 30 percent of instances adults repeat children's verbalization in a grammatically more complex form accenting the elements that may have been omitted or inaccurately employed (Brown & Bellugi, 1964); and children often reproduce the more complicated grammatical reconstructions

modeled by adults (Slobin, 1968).

The promising findings based on laboratory studies of modeling processes indicate that an efficacious program of behavioral modification is one in which change agents model the behaviors they wish their clients to acquire. During recent years, a number of modeling procedures have been devised and systematically applied to effect psychotherapeutic changes. These treatment approaches are reviewed next.

#### *ELIMINATION OF DEFICIT CONDITIONS THROUGH MODELING*

Many of the generalized behavior disorders that are most intractable are characterized by gross deficits not only in behavior but also in the basic psychological functions essential for learning. The more severe cases, such as autistic children and adult schizophrenics, generally

manifest little or no functional speech; they lack social skills that are conducive to reciprocally rewarding relationships; and interpersonal stimuli, which ordinarily serve as the principal medium of social influence, often have relatively little impact on them. Since human behavior is largely acquired through modeling and regulated by verbal cues and symbolic reinforcers, profound deficiencies in functions of this nature create major obstacles to treatment. These issues are best exemplified by the treatment of autism.

The elimination of autistic behavior is further complicated by the fact that such children are characteristically engrossed in repetitive motor activities and other forms of self-stimulatory behavior. Consequently, they remain oblivious much of the time to relevant environmental influences. The marked self-isolation is also generally coupled with strong resistance to

situational demands, as evidenced by their unwillingness to perform appropriate responses that they are obviously capable of making (Cowan, Hoddinot, & Wright, 1965). When behavioral demands within their capabilities are firmly applied, the children are inclined to avoid responding by evading the therapist or by resorting to tantrums and bizarre motor activities (Lovaas, 1966a; Colby, 1967). After such aversive behaviors lose their functional value for avoiding social demands through consistent nonreinforcement, autistic children typically respond with appropriate behavior (Risley & Wolf, 1967). However, the aversive countercontrol and lack of positive responsiveness eventually extinguish the concerted efforts of less durable therapists. Disappointing treatment outcomes, therefore, are frequently attributed to neurophysiological malfunction.

Although physiological variables are probably contributing factors in autism, it should be noted that even biologically deficient organisms are capable of learning provided that appropriate conditions are arranged. It is evident, however, from the adverse behavior characteristics of autism that extraordinary interventions must be employed, particularly in initial phases, if any fundamental changes are to be effected in the psychological functioning of autistic children.

One of the most provocative behavioral approaches to the treatment of autism, in which modeling procedures figure prominently, has been developed by Lovaas and his colleagues (Lovaas, 1967). The therapeutic program is based on the view that the total rehabilitation of autistic and schizophrenic children can be best achieved through the establishment of stimulus functions which make one amenable to social influence. This

process primarily involves developing children's responsiveness to modeling cues, increasing the discriminative value of stimulus events so that children attend and respond appropriately to aspects of their environment that they have previously ignored, and endowing social approval and other symbolic stimuli with reinforcing properties. After a strong modeling set has been created, and children have become adequately responsive to environmental influences, the major task of broadening children's social and intellectual competencies can be effectively carried out by parents, teachers, and other agents. Since interpersonal communication and social learning are extensively mediated through language, the development of linguistic skills is also selected as a central objective of treatment.

As noted previously, modeling outcomes depend upon accurate perceptual input. Autistic

children generally show defective reception of external stimuli, a deficit which has been attributed by some researchers to neurophysiological impairment (Hutt, Hutt, & Ounsted, 1965; Rimland, 1962). It cannot be determined from the available data whether the weak registration of external stimuli results from the interfering effects of high central arousal, from insufficient activation, from children's intense preoccupation with their own self-produced stimulation, or from some other factors. Whatever the reasons may be, it is evident that little headway can be made toward effecting behavioral change unless adequate control is gained over children's attending behavior. Lovaas' method for developing language functions in profoundly autistic children, who display marked withdrawal and bizarre self-stimulatory behaviors most of the time, achieves attentional control through several

means. First, the therapist establishes close physical contact by sitting directly in front of the child so he cannot easily ignore the responses that are being modeled. Second, during the session the child is not permitted to avoid the therapeutic task by withdrawal or by resorting to bizarre activities. If necessary, the therapist physically restrains the child from turning away, he establishes eye contact by asking the child to look at him, and he may withhold positive attention, address the child sharply, or even slap him on the thigh to terminate stereotyped bizarre behavior. Firm intervention of this type, if thoughtfully employed, may serve a therapeutic function when failure to respond appropriately to situational demands reflects unwillingness rather than inability. This is dramatically illustrated in a telling sequence from a film depicting the language learning program (Lovaas, 1966b). A therapist repeatedly asks a girl



to name the color of a yellow crayon, to which she responds with increasingly bizarre arm-flapping and peculiar grimacing. Finally, the girl is slapped on the thigh, and instructed to name the color, whereupon she abruptly ceases the bizarre behavior and calmly answers, "Yellow." As a further means of augmenting and sustaining the child's attentiveness to modeling cues, food rewards, expressions of affection and social approval are made contingent upon imitation.

If children's behavioral repertoires are impoverished, their behavioral reproductions may be deficient even though they pay close attention to modeling cues, because the requisite components for the modeled responses are lacking. In such cases complex patterns of behavior must be reduced to small subunits of behavior, each of which is established through modeling. Poorly designed learning sequences,

which result in stressful failure experiences, jeopardize attentional control by reducing the child's motivation to observe the modeled responses and by arousing disruptive escape behaviors. To obviate this problem modeled responses are carefully graduated in complexity to assure the child a high degree of success in behavioral reproduction.

In teaching autistic children communicative speech a modeling-reinforcement procedure is employed in which the therapist displays progressively more complex forms of verbal behavior and rewards increasingly closer reproductions of the modeled responses. In teaching a mute child to talk, for example, the therapist first rewards any visual attentiveness and random sounds made by the child. When vocalization has been increased, the therapist utters a sound and the child is rewarded only if he

produces a vocal response within a certain time limit. After the therapist's speech is established as an effective stimulus for the child's vocalizations, he is reinforced only for precise verbal reproduction of specific sounds, words, and phrases modeled by the therapist. By this method children are first taught elementary sounds that have pronounced visual components and can be manually prompted, and then, in a stepwise fashion, more complicated utterances and combinations of words are added. Essentially similar methods for establishing verbal imitateness are described in considerable detail by Risley & Wolf (1967) in the treatment of autistic children, and by Sloane, Johnston, & Harris (1968) in remedial programs for speech-deficient young children.

As exemplified by a case illustrated in Figure 3-5, it may require several days for an autistic child

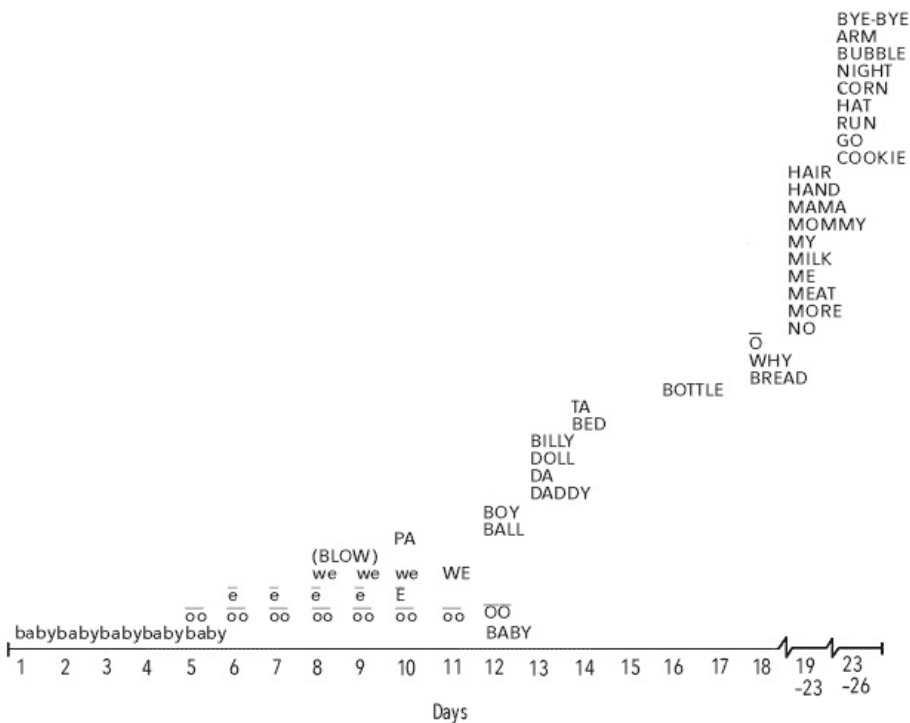


Figure 3-5. Rate of verbal imitation by a previously mute autistic child during the first 26 days of training. The words and sounds are printed in lower case letters on the days they were introduced and trained, and in capital letters on the days they were mastered. Lovaas, Berberich, Perloff, & Schaeffer, 1966.

to master the first word, but subsequent imitative word learning generally proceeds at a comparatively rapid rate. The fact that the establishment of two sounds and one verbal response is accompanied by immediate production of many new words composed of elements that were never directly trained indicates that autistic children possess greater linguistic competencies and comprehension of grammatical features than is commonly believed. One would expect some language acquisition to occur through observational learning as a function of extensive exposure to grammatical speech. The absence of verbal behavior in autistic children may, therefore, partly represent a motivational rather than a behavioral deficit. The question remains as to whether the abrupt rise in productivity results from children's acquisition of a modeling set, from realization that oppositional

tactics have become nonfunctional, or some other factors.

Lovaas also provides some evidence to indicate that, during the initial phase of imitation training, extrinsic incentives may be essential for accurate observation and reproduction of the therapist's performances. Children displayed a high level of accurate imitative responsiveness when rewards were made contingent upon matching the adult's speech perfectly; by contrast, when children were equally generously rewarded after a certain time had elapsed without regard to the quality of their verbalizations, their imitative behavior progressively deteriorated until it bore little resemblance to the model's responses (Figure 3-6). However, in later stages of treatment, similar shifts from response- to time-contingent reinforcement did not adversely affect modeling outcomes.

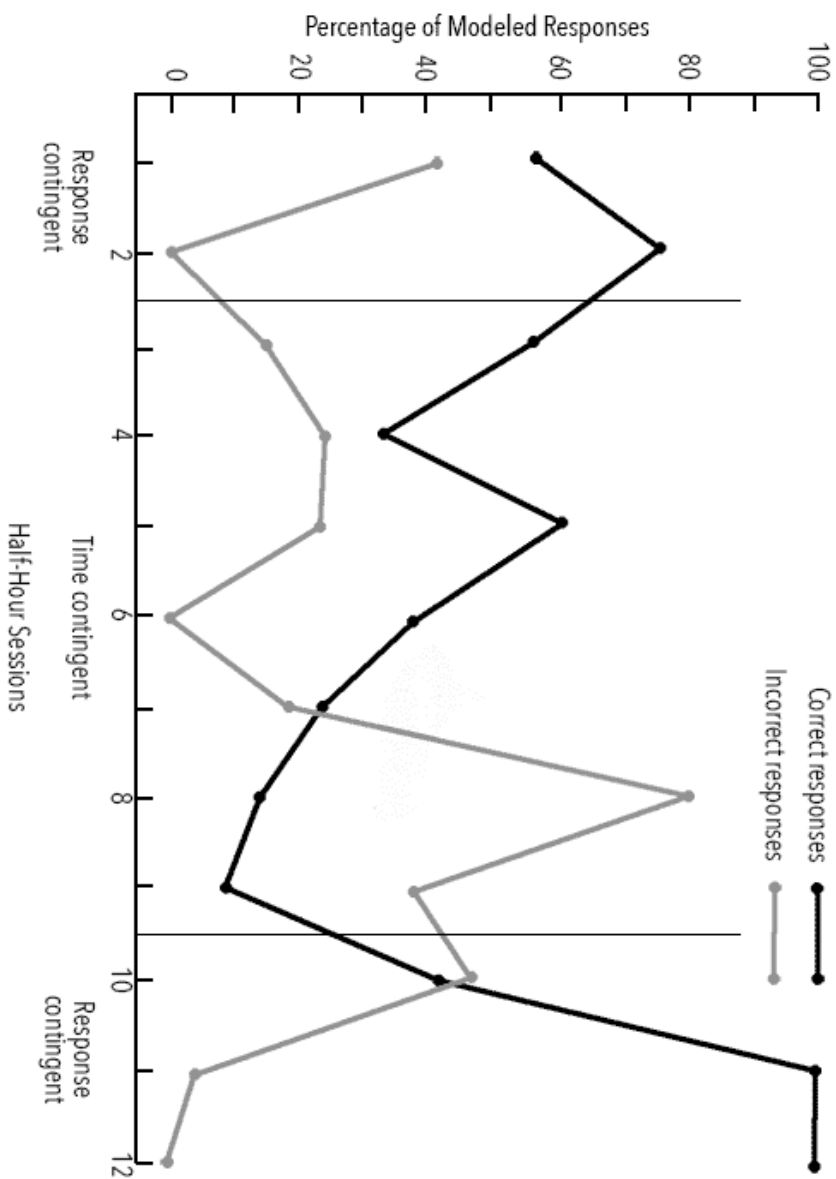


Figure 3-6. Percentage of modeled responses correctly and incorrectly reproduced by an autistic child during periods when rewards were made contingent upon matching perfectly the adult's speech (response contingent) or the elapsing of a certain amount of time (time contingent). Lovvaas, 1967.

When children are able to imitate new words they are taught a labeling vocabulary so that they understand what the words mean. This is achieved through a form of paired-associate learning in which the therapist presents an object (e.g., glass of milk) or models an activity (e.g., claps hands) and simultaneously provides the correct verbal label. On succeeding trials the adult's verbal prompt is gradually withdrawn until eventually the child gives correct verbal responses to the nonverbal events alone. In this way a wide variety of object-word associations are learned and discriminated. Reading skills are established in a similar manner except that letter-picture and letter-word associations are presented to the



children until they learn to make the appropriate verbal responses to printed words in the absence of pictorial or vocal prompts.

After children have been taught to speak and to correctly label common objects and activities, training in abstract linguistic functions begins. This program consists essentially of rewarding the child's discriminative responsiveness to verbally or behaviorally modeled events. Whenever the child fails to respond or responds incorrectly he is aided by verbal and manual prompts which are gradually faded out on succeeding trials. Prepositional training will illustrate the basic discriminations that are developed. Behavioral matching of a verbal stimulus can be more easily achieved by autistic children than verbally labeling nonverbal events. Therefore, initially the adult gives a verbal instruction involving a preposition (e.g., "Put the ball inside the box") and

the child is rewarded for performing the motor response appropriate to the verbal stimulus. If the child fails to execute the response correctly, the therapist moves the child's hand with the ball to the box while verbalizing the action. In the second discrimination, objects are arranged in a particular way and the child is asked to describe verbally the relationships between the objects, using the proper preposition. In the third step, which calls for grammatical conversation, the child responds verbally to a verbal stimulus (e.g., "Where did I put the bicycle?") without concomitant behavioral enactment of the events to which reference is made. As in other forms of rule learning, children are taught to generalize the linguistic rule by modeling a variety of objects in a variety of prepositional relationships. Essentially the same procedures have been successfully employed to establish increasingly complex forms of linguistic

and conceptual behaviors (Lovaas, Berberich, Kassorla, Klynn, & Meisel, 1966; Lovaas, Dumont, Klynn, & Meisel, 1966). In the case of echolalic children, inappropriate matching responses are extinguished through reinforcement withdrawal, but otherwise the training program is similar to that employed with mute cases. However, since echolalic children have already developed imitative speech, they start at a more advanced level and proceed at a much faster rate.

Formal language training is well suited for establishing verbal skills but it may result in speech that is lacking in spontaneity and overly dependent upon specific external cuing. To remove this problem, after the requisite skills for generative grammatical speech have been established, children are taught to use their language to initiate and maintain social interactions, to express their feelings and desires,

and to seek and exchange information about their environment. Self-generated spontaneous speech is initially fostered in several ways. First, by withholding desired objects and activities until children verbalize their wants, they are taught to influence and control their environment verbally; second, they are encouraged to develop comments and stories about activities depicted pictorially in magazines and books and are rewarded for increasingly elaborate and novel verbalizations; third, they are asked to recount, in detail, past experiences; and finally, the concepts that they have learned in the formal tasks are extended into informal daily interactions. Indeed, as treatment progresses the formal training procedures are incorporated into more natural interpersonal interactions, where verbal approval, affectional expressions, play activities and a sense of accomplishment replace primary rewards as

major reinforcing events.

Self-care skills, play patterns, appropriate sex-role behaviors, intellectual skills, and interpersonal modes of behavior can be established in autistic children more rapidly than linguistic patterns by modeling the appropriate activities and rewarding the children's emulations (Lovaas, Freitag, Nelson, & Whalen, 1967). The training program in nonverbal behavior relies upon the same basic methods employed in language learning. The therapist first establishes control over children's attending behavior; complex response patterns are gradually elaborated by modeling activities in small steps of increasing difficulty; manual prompts are utilized if children fail to respond. The prompts are gradually withdrawn and reinforcement for prompted behavior is later withheld to counteract passive responsiveness. After imitative behavior is

strongly developed, stimulus control of children's behavior is shifted from modeling cues to verbal prompts and appropriate environmental stimuli. Children may, for example, initially engage in painting activities only when they are modeled by an adult, but by reinforcing painting in response to verbal suggestions and art materials they eventually learn to pursue such activities without requiring a performing model.

The encouraging results of the project described above would suggest that a modeling-reinforcement approach merits serious consideration in the treatment of schizophrenic disorders. Since the beneficial outcomes are achieved with nurses, parents, and college students serving in the role of therapists, this treatment approach gains further social significance. However, evidence that children vary tremendously in their rates of learning,

particularly in early stages of training, indicates the need for comparative studies to evolve procedures that would permit even greater control over the change process. For example, discrimination of modeling stimulus inputs is an important prerequisite to their acquisition. In the case of language learning, a brief program of discrimination pretraining may greatly accelerate modeling outcomes and reduce variability resulting from deficiencies in speech perception.

For children who do not know the meanings of modeled utterances, word reproduction is apt to be a dull and tiresome exercise. A preliminary program aimed at producing word comprehension would make the situation more meaningful and perhaps facilitate productive word learning. A sequence similar to this type has been employed by Humphrey (1966) in developing language functions in autistic children. As a way of ensuring

necessary attentiveness, children are seated in a semi-darkened room and equipped with earphones. In the initial language comprehension phase of the program children see pictures of objects projected on a screen and hear the corresponding verbal labels without having to reproduce them. After the word-object association has been repeated sufficiently to establish the meanings of the utterances, children are reinforced for correct production of modeled verbalizations. Generalization and discrimination are not left to chance: Thus, children may first see a dog as the focal object of a slide, but later it is presented as part of increasingly complex arrays of animals that will have to be accurately discriminated. By including pictures or demonstrations representing actions, qualifying attributes, and object interrelationships the same procedure can be extended to develop



increasingly complex linguistic skills. Humphery has also found it advantageous to include samples of the children themselves and their peers pursuing activities in their natural surroundings, because the immediacy of these stimuli make them especially vivid and compelling inputs. This approach is similar in many respects to language learning under naturalistic conditions where children observe a considerable amount of verbal behavior before they are taught to produce words and grammatical sentences. However, the optimal sequences for word and meaning training remain to be demonstrated.

Except for a few minor applications (Sherman, 1965; Wilson & Walters, 1966), there has been no systematic use of modeling procedures in the treatment of adult psychotics. This is all the more surprising considering that a majority of the chronic cases suffer from debilitating behavioral

deficits which must be overcome if they are to function effectively in community life. The relative neglect of this powerful approach probably results in large part from therapists' strong allegiances solely to operant conditioning methods or to interview procedures in which a great deal of time is devoted to analyzing patients' ineffectual behaviors.

*MODIFICATION OF PREPOTENT RESPONSE  
PATTERNS THROUGH SYMBOLIC MODELING*

The discussion thus far has been concerned with the use of modeling procedures to overcome behavioral deficits. In many instances, a change agent is faced with the opposite problem—that of eliminating strongly established patterns of deviant or maladaptive behavior. One might attempt to accomplish this objective by a program of differential reinforcement, in which socially desirable behavior is positively reinforced and

deviant response patterns are either nonrewarded or punished. Selective reinforcement is often a slow and inefficient process when a person displays a strong dominant response tendency and desired alternative modes of behavior are only weakly established or nonexistent in his behavioral repertoire. Under these circumstances, one may have to wait an unnecessarily long or indefinite time for the appearance of alternative responses. In such cases, the change process may be greatly facilitated by the use of modeling procedures designed to transmit, elicit, and support modes of response that are incompatible with the deviant behavior that a therapist is attempting to eliminate. This, in effect, was the strategy employed by Chittenden (1942) in modifying children's hyperaggressive and domineering responses to frustration.

It has been widely assumed on the basis of

psychodynamic theories and energy models of personality that either vicarious participation in, or the direct expression of, aggressive behavior serves to discharge “pent-up energies and affects” and thereby to reduce, at least temporarily, the incidence of aggressive behavior. Guided by this catharsis theory, many parents, educators, rehabilitation workers, and child psychotherapists subtly or openly encourage hyperaggressive children to express aggression in one form or another. The overall evidence from laboratory studies (Bandura, 1965a; Berkowitz, 1969) strongly indicates that psychotherapies employing these conventional cathartic or abreactive procedures may be unwittingly maintaining deviant behavior at its original strength or, more likely still, increasing it rather than producing the expected reductions in aggressive tendencies. In contrast, therapy based upon social-learning

principles would concentrate, from the outset, upon developing and strengthening constructive alternative patterns of behavior. Proceeding on this basis, Chittenden employed symbolic modeling procedures for altering children's aggressive reactions to frustration.

Children who were excessively domineering and hyperaggressive observed and discussed a series of eleven 15-minute plays in each of which dolls, representing preschool children, exhibited an aggressive solution and a cooperative, alternative solution to interpersonal conflicts under circumstances that the children were likely to encounter in everyday interactions. In addition to modeling these two competing response patterns, the consequences of aggression were shown to be unpleasant and those of cooperativeness to be rewarding. In one of the modeled situations, for example, two boys engage

in a fight over the possession of a wagon; during the struggle the wagon is broken, and both boys end up unhappy. By contrast, the cooperative alternative presents the boys enjoying themselves as they take turns playing with the wagon.

Children for whom the different reactions and consequences were modeled showed a decrease in dominative aggressiveness (as measured by situational tests in which two children were placed in a room with a single attractive toy) compared with a group of similarly hyperaggressive children who received no treatment. Of even greater interest is the finding that children who had observed the discriminative modeling displayed a significant decrease in domination and an increase in cooperativeness as assessed from behavior observations in the nursery school made prior to treatment, immediately after treatment, and a month later

(Figure 3-7). One cannot determine from these data the relative contribution of vicarious reinforcement and modeling to the obtained outcomes. The children's spontaneous comments and enactments during test trials, in which they were required to provide their own solutions to social conflicts involving the dolls, indicated that they had learned the cooperative strategies. Some, however, gave evidence of also being strongly affected by the consequences depicted: "Well, let's don't have them fight; I don't like to have them bump their faces together, that hurts....Let's have them take turns; then they won't fight. Let them ask Darrell (subject's name) what to do. 'Ask me, Sandy and Mandy (dolls' names). I'll tell you to take turns; then you won't have a fight' (Chittenden, 1942, pp. 53-54)."

In a preliminary report Gittelman (1965) illustrates how behavioral enactment methods can

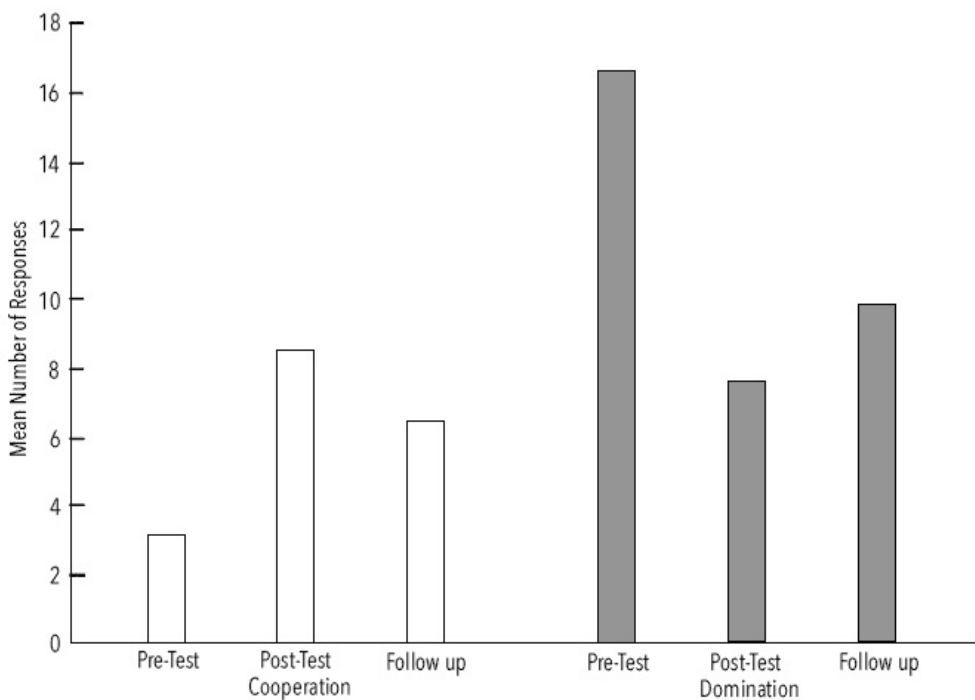


Figure 3-7. Amount of cooperative and domineering behavior exhibited by hyperaggressive children before and after receiving symbolic modeling treatment. Drawn from the data of Chittenden, 1942.



be adapted for modifying aggressive behavior in older children. They are first asked to describe situations that typically provoke them to aggression and belligerence. A hierarchy of irritating situations is then constructed, ranging from those causing only mild annoyance to extremely instigatory ones. The child and other group members enact these progressively aggravating situations and practice effective nonviolent means of coping with them.

The treatment program devised by Chittenden primarily relied upon modeling techniques. After desired patterns of behavior have been established through some form of modeling, their maintenance will be largely controlled by the reinforcement practices existing within the naturalistic setting. Hence, it may be necessary to arrange favorable consequences to support newly acquired response patterns. This would apply

particularly to behavior that is ordinarily associated with less optimal reinforcement conditions, as in the case of cooperativeness which was more difficult to establish and to maintain. The combined use of modeling and reinforcement procedures is probably the most efficacious method of transmitting, eliciting, and maintaining social response patterns.

There is additional evidence that symbolic modeling approaches, in which desired response patterns are demonstrated concretely through play activities, may be especially well suited for modifying the behavior of young children, Marshall & Hahn (1967) showed that preschool children who participated in several sessions of doll play with an adult who enacted topics commonly used in children's play subsequently increased their dramatic play with peers in daily interactions. The absence of any significant

changes in the play behavior of control groups of children who either received the same amount of adult warmth and attention during the assembly of blocks and puzzles or had no contact with the adult indicates that modeling and support of social play behavior was the major determinant.

The foregoing studies illustrate the way in which the same method, doll play, is utilized in radically different ways depending upon whether one views behavior from a psychodynamic or a social-learning perspective. In the former case, children are typically prompted to enact in doll play assaultive and other negative response tendencies toward parents, teachers, siblings and peers which, if transferred to real life situations, would further exacerbate their problems. In contrast, the latter approach provides more satisfactory solutions to interpersonal conflicts and models beneficial modes of behavior that are

likely to foster positive social experiences.

Results of a study by O'Connor (1969) involving positive symbolic modeling lend further empirical support to the above view. Preschool children were selected who showed extreme social withdrawal, a behavior problem that often reflects both deficits in social skills and fear of close interpersonal contact. Half of these children were shown a control film, while a matched group of isolates observed a sound film depicting a variety of social interactions at a progressively more spirited activity level. Each filmed sequence portrayed a child initially watching the ongoing activities at a distance but eventually joining and interacting with the children, with evident positive consequences. In a behavioral assessment conducted immediately after the treatment session the controls remained markedly withdrawn, whereas children who received the

symbolic modeling showed a substantial increase in social interaction to the baseline level displayed by nonwithdrawn children (Figure 3-8). With the provision of adequate practice and reinforcement of newly established social skills, such behavior would undoubtedly assume greater functional value and endure.

#### *OTHER THERAPEUTIC AND INSTRUCTIONAL APPLICATIONS OF MODELING*

Applications of modeling procedures are by no means confined to children or to grossly deviant conditions. Behavioral enactment methods are frequently utilized for a wide variety of purposes in which people who want to develop new competencies are provided with actual or symbolic models of desired behavior. They are given opportunities to perform these patterns initially under nonthreatening conditions before they are encouraged to apply them in their

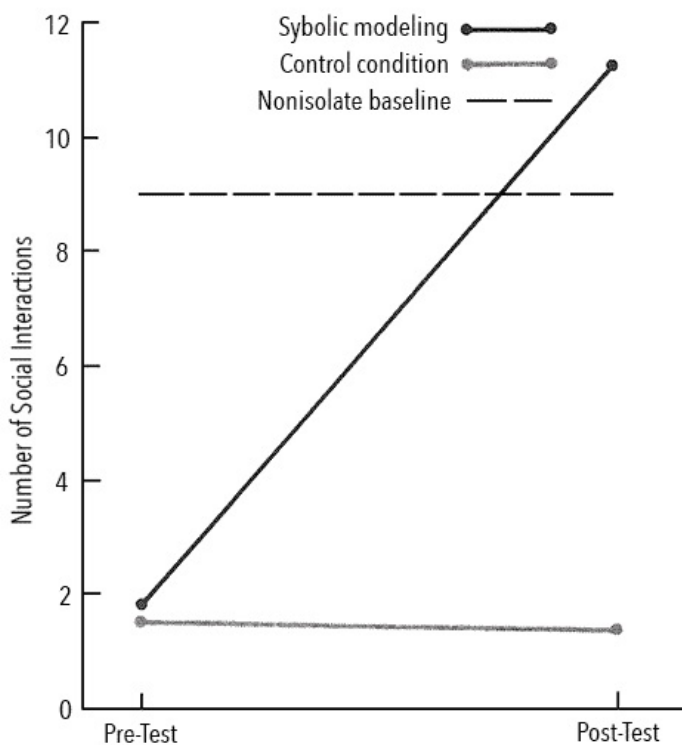


Figure 3-8. Amount of social interaction shown by withdrawn children in the symbolic modeling and control conditions before and after the experimental sessions. The dotted line represents the amount of social interaction displayed by a group of nonisolate children whose behavior was observed at the pretest phase of the study. O'Connor, 1969.

everyday lives. Since, in modeling approaches, a person observes and practices alternative ways of behaving under lifelike conditions, transfer of learning to naturalistic situations is greatly facilitated.

Some treatment approaches, such as Kelly's (1955) fixed-role therapy, rely almost exclusively upon modeling procedures. In the initial phase the therapist writes a personality sketch suitable for enactment by the client. He is then asked to perform the role behaviors continuously as if he were, in fact, the person portrayed in the sketch. For example, a passive nonassertive person may be assigned an active assertive role. The new behavioral patterns, which are usually in marked contrast to the client's customary modes of responses, are consistently enacted for several weeks or some other preselected period. This phase of the program is structured to the client as

representing brief experimentation with, rather than permanent adoption of, new characteristics. Moreover, the client is never told that he should be the new character, only that he should act like him on a trial basis. The emphasis on brief experimentation and simulation is considered essential for minimizing the initial threat of making sweeping changes in one's mode of life.

Prescribing a role by itself will be of limited value unless a person knows how to translate it into concrete actions under a variety of circumstances. In Kelly's approach the treatment sessions, usually scheduled on alternate days, are mainly devoted to rehearsing the prescribed role as it might apply to everyday events involving vocational and social relationships, heterosexual interactions, parental relations, and life orientations. Therapist and client usually alternate in the role enactment. Through such role-reversal



the client not only benefits from the therapist's demonstration of skillful ways of relating to others, but he also experiences how people are likely to be affected by the behaviors being modeled.

After new forms of responsiveness to different types of interpersonal situations have been adequately rehearsed, and the client's actual experiences in implementing the role have been thoroughly discussed, the client decides whether or not he wishes to adopt the new role behaviors on a more lasting basis. If he has found the new role effective and wishes to go on with the program the behavioral rehearsals are continued as long as necessary. With further experience the client becomes increasingly skillful and comfortable in the new role behaviors until eventually they are spontaneously performed.

Although there is every reason to expect from evidence of modeling studies that the type of approach advocated by Kelly should be highly efficacious, there have been no systematic attempts made to measure the degree of success associated with this particular method. Research is also needed to determine whether the recommended practices—the selection of markedly contrasting behavior that is continuously enacted under a simulated set in all areas of social functioning—are, in fact, the optimal conditions for establishing new role behaviors. Desired outcomes might be more consistently attained by gradual role adoption in progressively more difficult social situations than by complete role enactment from the outset. Under a graduated procedure the behavioral requirements would be adjusted to the client's capabilities at any given time and would hence

reduce the possibility that his initial attempts at new ways of behaving would be poorly received by others. By careful selection of both the real-life situations in which the client enacts new modes of behavior and the manner in which they are expressed, the likely consequences of modeled behavior can be controlled to a considerable extent rather than left to fortuitous circumstances.

There are many other treatment approaches in which modeling techniques, variously labeled psychodramatic enactment (Moreno, 1958; Sturm, 1965), behavior rehearsal (Lazarus, 1966; Wolpe & Lazarus, 1966), and role playing (Corsini & Putzey, 1957) are employed to overcome specific response deficits or to transmit more extensive repertoires of social behavior. Modeling in the form of role practice has also been extensively adapted for training of industrial and managerial skills (Corsini, Shaw, & Blake, 1961). Strategies to

be followed in implementing modeling principles are presented in strong prescriptive terms and the methods are credited with much success, but as is generally true of the psychotherapy literature, rigorously controlled studies of outcomes are virtually nonexistent.

The efficacy of modeling approaches will be largely determined by what is being enacted. If change agents mainly encourage clients to perform their customary ineffectual forms of behavior, to reconstruct past relationship experiences, and to revivify the emotional reactions engendered by their inadequacies, then these methods are unlikely to fare any better than interpretive interview approaches that similarly accentuate the negatives. On the other hand, treatment approaches that employ modeling procedures to establish effective modes of behavior often lack an adequate transfer training

program in which clients are provided with opportunities to test their newly acquired skills under conditions likely to produce rewarding consequences. If change agents themselves portray requisite interpersonal competencies, and arrange optimal conditions for their clients to learn and to practice more effective means of coping with potential problems, then this type of approach is almost certain to prove successful.

Before turning to other issues we should like to comment briefly on the nature of the effects produced through modeling processes. When people are deliberately instructed to observe and to reproduce either the behavior exemplified by others or an imaginatively reconstructed role, there may be a tendency to view the resultant changes as feigned and superficial. In fact, as will be shown in the concluding chapter, role enactment techniques have proved to be one of

the most effective means of inducing stable affective and attitudinal changes. These findings provide support for the view that self-evaluative and cognitive events may be partly epiphenomena arising from one's competencies and the consequences of one's behavior. Modeling, even under simulated conditions, can have far-reaching effects.

#### *MODELING PROCESSES IN INTERVIEW PSYCHOTHERAPIES*

It is generally assumed that personality modifications in conventional verbal treatments are achieved in part by clients' identification with their psychotherapists. However, as Mowrer (1966) has noted, therapists characteristically model a very limited range of social behavior, and what they do exemplify most prominently may have little utilitarian value for clients. The paucity of helpful modeling cues applies particularly to

treatment approaches that advocate a behavioral incognito in which therapists' feelings, personal opinions, and social responses are exhibited as little as possible in order to facilitate the occurrence of infantile transference reactions. To the extent that therapists' taciturnity and interpretive behaviors are mimicked by clients in their social relationships, as is not infrequent, they are apt to be considered as bores or pests. In contrast to conventional practices that invoke some degree of therapist ambiguity and concealment, Mowrer advocates that therapeutic agents actively model what their clients are supposed to learn and arrange conditions that will foster identificatory outcomes. Hence, in integrity therapy (Drakeford, 1967; Mowrer, 1964), which is designed to get clients to recognize that they are partly accountable for their life situations because of their objectionable and duplicitous behavior,

the therapist himself consistently models self-disclosure and personal accountability.

During the course of conversational treatment some of the therapists' attitudes and personal preferences are inevitably revealed through their selective responsiveness and interpretive comments (Parloff, Iflund, & Goldstein, 1960). These inferred attitudes are likely to be emulated by clients even though therapists may strive to maintain neutrality in the value domain. Some suggestive evidence of this effect is reported by Rosenthal (1955) who found that clients who were judged as showing greatest clinical improvement changed their values in the areas of sex, aggression and authority in the direction of their therapists' values whereas clients who were rated unimproved became less like their therapists. The occurrence of value congruences during the course of therapy is also shown by



Pentony (1966). It cannot be determined from these data, however, whether the value similarities are attributable to modeling or to differential reinforcement of clients' verbalizations; undoubtedly both kinds of influence processes are operative.

There have been several recent demonstrations that the classes of responses that traditional psychotherapists are interested in modifying can be significantly influenced by modeling procedures. Schwartz & Hawkins (1965) found that adult schizophrenics whose emotional statements were positively reinforced in group therapy increased affective expressions when their group was provided with two patient models who frequently verbalized their feelings; under the same reinforcement conditions affective responsiveness was decreased when the added models displayed predominantly nonaffective

verbalizations. Marlatt, Jacobsen, Johnson, & Morrice (1966) found that interviewees were more inclined to reveal personal problems after witnessing a brief waiting-room conversation in which a model's self-disclosure was either accepted or socially rewarded by the interviewer than if the model's behavior was discouraged or subjects had no exposure to a problem-admitting model.

One of the obstacles to efficient conduct of interview therapy arises from the fact that clients are usually confused about what they are supposed to do in order to achieve beneficial effects, and verbal explanations inadequately convey the requisite role behaviors. This ambiguity can be easily overcome by providing clients with concrete examples of appropriate therapeutic responsiveness (Marlatt, 1968a, 1968b). In several studies Truax and his

colleagues (Truax & Carkhuff, 1967) demonstrated that clients who listened to tape-recorded excerpts exemplifying self-exploration (considered to be “good” therapy behavior) prior to undergoing treatment subsequently achieved greater positive changes on a variety of personality tests than did clients who received the same type of treatment without the initial modeling experience.

The foregoing studies indicate that modeling procedures can be successfully employed to induce changes in verbal behavior. However, considering the weak relationships that exist between alterations at the verbal level—whether in the form of value preferences, verbal statements, or endorsements of personality test items—and nonverbal modes of response, it would seem that models could be used far more advantageously to promote effective interpersonal

behaviors directly.

## **Vicarious Conditioning of Emotional Responsiveness**

It is generally assumed that persons develop emotional responses on the basis of direct painful or pleasurable stimulation experienced in association with certain places, people, or events. Although many emotional responses are undoubtedly acquired by means of direct classical conditioning, affective learning in humans frequently occurs through vicariously aroused emotions. Many phobic behaviors, for example, arise not from actual injurious experiences with the phobic objects, but rather from witnessing others either respond fearfully toward, or be hurt by, certain things (Bandura, Blanchard, & Ritter, 1969; Bandura & Menlove, 1968). Similarly, persons often acquire, on the basis of exposure to modeled stimulus correlations, intense emotional

attitudes toward members of unpopular minority groups or nationalities with whom they have had little or no personal contact.

As suggested above, vicarious emotional conditioning results from observing others experience positive or negative emotional effects in conjunction with particular stimulus events. Both direct and vicarious conditioning processes are governed by the same basic principle of associative learning, but they differ in the source of the emotional arousal. In the direct prototype, the learner himself is the recipient of pain- or pleasure-producing stimulation, whereas in vicarious forms somebody else experiences the reinforcing stimulation and his affective expressions, in turn, serve as the arousal stimuli for the observer. This socially mediated conditioning process thus requires both the vicarious activation of emotional responses and

close temporal pairing of these affective states with environmental stimuli.

### *VICARIOUS EMOTIONAL AROUSAL*

Experimental investigations of this phenomenon have been concerned with determining the factors that govern the degree to which people become emotionally aroused by the experiences of others. Some of the studies have attempted to identify the social cues that are most influential in producing vicarious arousal, while still others have been designed to elucidate the social-learning conditions whereby social cues become endowed with emotion-eliciting potency.

One of the earliest studies of vicarious affective arousal was reported by Dysinger & Ruckmick (1933), who measured the autonomic responses of children and adults to movie scenes depicting dangerous situations and romantic-erotic displays.

The findings showed that scenes of danger, conflict, or tragedy elicited the greatest emotional reactions among young children, but responsiveness decreased progressively with increasing age. The inverse relationship obtained was attributed to the greater ability of older persons both to discriminate between fantasied and realistic situations and to attenuate the aversiveness of danger cues by forecasting eventual favorable outcomes. As would be expected, emotional reactions to erotic scenes were stronger among subjects in older age groups.

More recent demonstrations of vicarious emotional instigation through filmed stimulation is provided in a series of experiments by Lazarus and his associates (Lazarus, Speisman, Mordkoff, & Davison, 1962). Continuous recordings of subjects' autonomic responses were obtained during presentation of a film portraying a primitive

puberty ritual of an Australian tribe in which a native boy underwent a crude genital operation. College students displayed heightened autonomic responsiveness while viewing the genital subincision scenes, the reactions being particularly marked when the operation was accompanied by sobs and other pain cues on the part of the young initiate. Both the deletion of the vocal pain cues and the provision of sound-track commentaries that minimized the aversiveness of the depicted operation significantly reduced the subjects' level of emotional arousal; conversely, commentaries highlighting the suffering and hazards of such operations enhanced observers' physiological arousal (Speisman, Lazarus, Mordkoff, & Davison, 1964).

In an erudite analysis of vicarious processes, Berger (1962) restricts the phenomenon of vicarious instigation to situations in which an



observer responds emotionally to a performer's presumed affective experiences. Since the emotional state of another person is not directly observable, its presence, quality, and intensity is typically inferred both from stimuli impinging upon the performer, and behavioral cues indicative of emotional arousal. As Berger points out, a person may be vicariously instigated on the basis of erroneous inferences from stimulus events, as in the case of a mother who responds fearfully at seeing her child fall, even though the child is, in fact, unhurt and undisturbed. Similarly, a bystander may react apprehensively to hearing a sudden loud scream although, unknown to him, the distressing vocalizations are simulated as part of a game.

Berger has reasoned that a loud scream that elicits a fear response from the observer may represent a case of pseudovicarious instigation,

because the vocal cue may serve merely as a conditioned fear stimulus independent of the performer's unconditioned emotional response or the stimulus situation. The basis for this distinction is debatable, since expressive cues are the observable indicants of a performer's assumed emotional state and, as will be shown later, it is precisely because such social cues have acquired emotion-provoking properties that an observer can be at all vicariously aroused by the experiences of another person. There are, however, instances in which covariations in the emotional responses of observers and performers do not necessarily involve vicarious instigation processes. After a given environmental stimulus has acquired strong eliciting potency for an observer, his emotional responses are likely to be evoked directly by the conditioned stimulus, regardless of the behavior of others. Thus, for

example, when individuals become fearful upon hearing the sound of a fire alarm in the building in which they are working, they may be responding similarly, because of like conditioning histories, but independently to the same nonsocial cue. Under these circumstances it is exceedingly difficult to establish precisely the stimulus sources of the observer's emotional state since the behavior of others, depending on its character, undoubtedly augments or reduces the effects of environmental eliciting stimuli. The most convincing demonstration of vicarious instigation is therefore provided under conditions where the observer's emotional responses are elicited entirely by the performer's affective expressions. Such conditions are established by ensuring that the stimuli which elicit emotional responses in the performer either are unobservable by, or of neutral valence for, the observing subject.

Miller and his colleagues (Miller, Banks, & Ogawa, 1962, 1963; Miller, Murphy, & Mirsky, 1959) have identified, through the use of an ingenious cooperative avoidance-conditioning procedure, some of the social cues that serve as conditioned stimuli for affective arousal in observers. Rhesus monkeys were first trained to avoid an electric shock by pressing a bar whenever a stimulus light appeared. After the avoidance training, the animals were seated in different rooms, and the bar was removed from the chair of one monkey and the stimulus light from the other. Thus, the animal having access to the light stimulus had to communicate by means of affective cues to his partner, equipped with the response bar, who could then perform the appropriate instrumental response that would enable both animals to avoid painful stimulation. Distress cues exhibited by the stimulus monkeys

in anticipation of shock were highly effective in eliciting fear in their observing companions as reflected in increased heart rate and rapid performance of discriminated avoidance responses (Miller, 1967). The finding that color slides showing the stimulus animal in fear or pain elicited more avoidance responses than pictures of the same animal in nonfearful poses indicates that simple facial and postural expressions alone are sufficient cues for eliciting emotional responses. The investigators further showed that emotional responses in monkeys could be vicariously aroused not only by the sight of their experimental counterparts, but also, through stimulus generalization, by another monkey who was never involved in the original aversive contingencies. Moreover, mere exposure to a monkey reacting in an apprehensive or fearful manner could reinstate avoidance responses in the observer after they

had been extinguished to a zero level.

The above studies demonstrate that affective expressions by others can serve as conditioned aversive stimuli, but they do not explain how such cues acquire their potency. That sensitivity to expressive cues results from social-learning experiences receives support from Miller, Caul, & Mirsky (1967), who found that monkeys reared in total social isolation during their infancy were unresponsive, either behaviorally or autonomically, to facial expressions of emotions of other monkeys. There is evidence that social cues signifying affective arousal acquire emotion-provoking properties through essentially the same process of classical conditioning that is involved in the establishment of positive or negative valence for nonsocial environmental stimuli. That is, if affective expressions of others have been repeatedly followed by emotional consequences

for observers, affective social cues alone gradually attain the power to instigate emotional reactions in observers. In naturalistic situations such emotional covariations occur frequently. Persons who are experiencing positive emotions are likely to treat others in amiable ways which arouse in them pleasurable affects; conversely, when persons are dejected, ailing, distressed, or angry, others are also likely to suffer negative consequences. The clearest demonstrations of how vicarious responsiveness is established are furnished by laboratory studies with infrahuman subjects in which the requisite social and temporal contingencies are instituted.

Church (1959) subjected groups of rats either to paired aversive consequences or unpaired consequences, or assigned them to a control condition in which no aversive stimuli were presented. In the paired-consequences condition

animals were administered brief shocks after another rat had been shocked for 30 seconds, with the aversive stimulation to both animals terminating simultaneously. Animals in the unpaired-consequences condition received the same number of brief shocks, but these were not temporally associated with painful stimulation to another rat. Following the emotional conditioning phase of the experiment vicarious emotional arousal was measured in response to the pain reactions of another rat that was continuously shocked in an adjacent cage. Animals that had previously experienced paired consequences were markedly affected by the pain responses of another rat; the control group showed little empathetic responsiveness; and animals whose past distressing experiences were unassociated with the pain responses of another member of their species showed an effect intermediate



between the two groups.

Conditioning in humans is frequently mediated through self-generated symbolic stimulation, which also plays an influential role in vicarious responding (Bandura & Rosenthal, 1966; Stotland, Shaver, & Crawford, 1966). In personality theory vicarious emotional arousal is typically discussed under the concept of empathy. Within the personality framework it is generally assumed that an observer becomes empathetically aroused as a result of intuiting the experiences and affective states of another person. The research reported by Stotland indicates, however, that a somewhat different process may be involved. Observers reacted more emotionally to the sight of a person undergoing painful stimulation when they were previously asked to imagine how *they themselves* would feel if they were being hurt than when they were told to imagine how the *other*

*person* felt during the treatment. These findings suggest that modeled affective cues produce vicarious arousal largely through an intervening self-stimulation process involving imaginal representation of aversive or pleasurable consequences occurring to oneself in similar situations.

Of the various interpersonal determinants of empathetic responsiveness the perceived similarity between model and observer has received greatest attention. It has been generally found that perceived similarity enhances vicarious arousal (Stotland, 1969), but why this should be so has not been adequately established. A likely explanation could be put in terms of outcome similarities. One would expect people who possess similar interests and characteristics to share many experiences and outcomes in common. It is much easier for a person to imagine that the

consequences to individuals similar to himself would apply to him than to imagine the same thing about the experiences of people with whom he has little in common. Thus, for example, a person who often travels the airways is apt to be more empathetically aroused upon hearing of fatalities resulting from a commercial airplane accident than someone who never flies. This explanation assumes that vicarious responsiveness is based upon active self-arousal rather than automatic identification through similarity. Indeed, if people who possess similar characteristics rarely experienced concordant outcomes, they would most likely exhibit weak empathy. The relative influence of personal similarity and outcome similarity on vicarious arousal could be best evaluated by an experiment in which similar people experience opposite consequences prior to the empathy test, whereas dissimilar people

encounter identical outcomes. It would be predicted from social-learning theory that discrepant outcomes would override the effects of personal similarity. The strongest empathetic responsiveness would, of course, be expected to occur under conditions of high observer- model similarity and analogous consequences.

#### *VICARIOUS CLASSICAL CONDITIONING*

In the preceding section we reviewed some of the conditions under which emotional responses of a model, as conveyed through auditory, facial, and postural manifestations, acquire the capacity to arouse emotional responses in observers. In the case of vicarious classical conditioning, the observers' vicariously elicited emotions become conditioned, through contiguous association, to formerly neutral stimuli. One of the earliest laboratory investigations of this process was

reported by Kriazhev (1934), who conditioned one animal in each of seven pairs of dogs to stimuli presented in conjunction with food or electric shock, while the other member of the pair merely witnessed the procedure. The observing dogs rapidly developed anticipatory salivary responses to the signal for food, and conditioned agitation and respiratory changes to the signal for shock. However, this brief report does not contain sufficient information on the details of the experimental procedure to determine whether the observers' reactions to the conditioned stimulus were tested in the absence of the models.

Laboratory investigations of vicarious classical conditioning in humans (Barnett & Benedetti, 1960; Berger, 1962) typically involve the conditioning of autonomic responses to neutral environmental stimuli through observational experiences. In Berger's (1962) studies, for

example, one group of observers was informed that the performing model would receive a shock whenever a light dimmed, the dimming of the light being in each trial preceded by a buzzer. A second group of observers was instructed that the performer would make a voluntary arm movement whenever the light dimmed but that he was receiving no aversive stimulation. In two other conditions the model was supposedly shocked but refrained from making arm movements, or the model was neither shocked nor withdrew his arm. The measure of vicarious conditioning was the frequency of observers' galvanic skin responses to the buzzer, which served as the conditioned stimulus. Observers who were informed that the model was receiving aversive stimulation and who witnessed the model simulate pain responses by jerking his arm displayed a greater degree of vicarious

conditioning than observers in the other three groups. In a further extension of socially mediated conditioning, Craig & Weinstein (1965) found that observation of a performer experiencing repeated failure produces vicarious emotional arousal that becomes conditioned to previously neutral environmental cues.

Although the phenomenon of vicarious conditioning has been clearly demonstrated, people differ widely in the rate with which they develop conditioned emotional responses observationally and in the stability of the acquired responses. Since this process requires the observer to experience painful consequences vicariously, thereby producing affective arousal, variables that influence an observer's general level of emotionality are likely to enhance or retard vicarious learning. There is some evidence (Bandura & Rosenthal, 1966) that emotional

arousal is, indeed, a significant determinant of vicarious conditioning, but the latter variables are not related in a simple linear fashion. In this experiment groups of adults observed another person undergoing aversive conditioning experiences in which a buzzer sounded at periodic intervals and shortly thereafter the model feigned pain, supposedly in response to having received painful electric shocks. Prior to the vicarious conditioning phase of the study, the groups of observers were subjected to differential degrees of emotional arousal manipulated both psychologically and physiologically through the administration of varying doses of epinephrine, a sympathetic stimulant. The frequency with which observers manifested conditioned galvanic skin responses to the buzzer alone was found to be a positive function of the degree of psychological stress (Figure 3-9). However, a monotonic



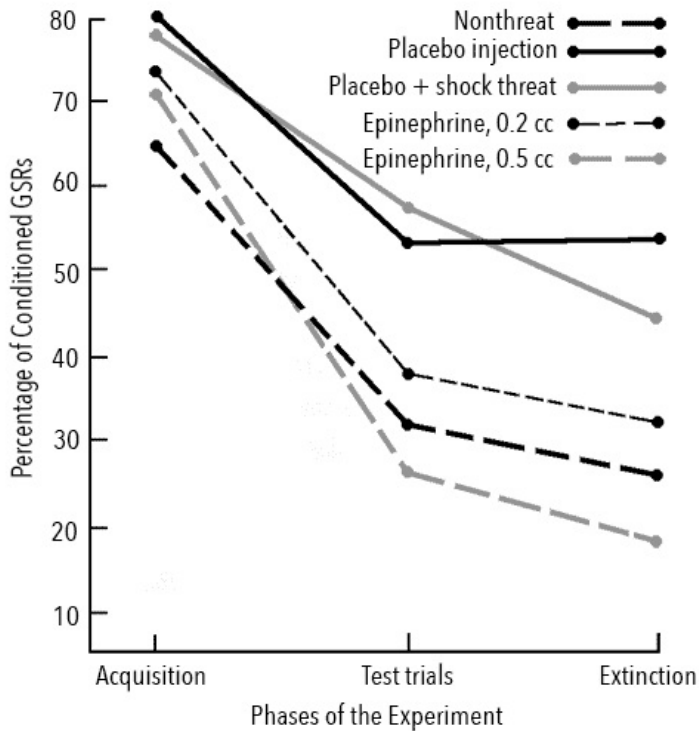


Figure 3-9. Mean percentage of GSRs exhibited by subjects during the acquisition phase, in which the tone and model's pain cues occurred in close temporal association, and during tests in which the formerly neutral tone was presented alone to assess its conditioned aversive properties. The five treatment conditions represent increasing degrees of affective arousal. Bandura & Rosenthal, 1966.

decreasing function is obtained when, in addition to situational stress, subjects experience increasing physiologically induced arousal. If it can be assumed that the five treatment conditions represent incremental levels of emotional arousal on a single dimension, then the combined results suggest an inverted-U relationship between magnitude of arousal and vicarious conditioning.

While the above study establishes a relationship between arousal level and vicarious conditioning, the manner in which high arousal produces disruptive effects remains to be demonstrated. Subjects' reports suggested that disruptive effects may, in part, be mediated by self-generated competing responses designed to reduce the aversiveness of the vicarious instigation situation. In some cases, this took the form of an intensive focus on irrelevant external stimuli, to the exclusion of the disturbing pain

cues: "When I noticed how painful the shock was to him I concentrated my vision on a spot which did not allow me to focus directly on either his face or hands." Most observers attempted to decrease the aversive stimulation arising from the model's pain reaction by conjuring up competing cognitive activities: "I tried to be cool. I thought about Latin verbs and about Latin composition." A few subjects, however, marshaled considerably more potent contravening cognitive responses: "I finally just tried to think about the girl I slept with last night. It kept my mind off those damn shocks." To the extent that an observer who is faced with distressing events succeeds either in attenuating unpleasant arousal by producing competing thoughts or in diverting his attention from disturbing stimuli, associated stimulus events are likely to become endowed with relatively weak aversive properties. In the above experiment

deliberate use of avoidant and stimulus neutralization stratagems was reported most frequently by persons in the highest arousal conditions.

The research discussed thus far has been entirely concerned with vicarious conditioning based on autonomic indices. Conditioned emotionality is also often measured in terms of behavioral suppression. If unpleasant experiences are repeatedly paired with a neutral stimulus, it acquires the power to evoke emotional reactions that tend to inhibit instrumental behavior in its presence. Crooks (1967) has shown that strong behavioral suppression can be established solely on the basis of observational experiences. After being tested for the extent to which they handled play objects, monkeys participated in a vicarious fear conditioning experiment in which they observed distress vocalizations sounded (through

a tape recorder) whenever a model monkey touched a particular object. Later the observers also received a control conditioning procedure wherein they witnessed the model's contacts with a different object paired with the distress vocalizations played backwards, thus obliterating the distressing value of the sounds. In a subsequent test the observing animals played freely with the control items, but actively avoided objects that accompanied supposedly painful experiences for another animal.

Although emotional behavior is probably often developed in everyday situations through vicarious means, there are few occasions when aversive forms of classical conditioning might be intentionally employed for therapeutic purposes. There are clinical reports (Miller, Dvorak, & Turner, 1960), however, in which aversive counterconditioning has been applied in a group

setting for creating aversion to alcohol in chronic alcoholics. Aversion reactions are rapidly established under such conditions, and most of the clients display strong vicarious conditioning effects. Positive vicarious conditioning, on the other hand, has rarely been employed systematically to develop empathy, pleasurable reactions, and favorable social attitudes.

### **Vicarious Extinction**

Emotional response patterns can be extinguished as well as acquired on a vicarious basis. Vicarious extinction of fears and behavioral inhibitions is achieved by having persons observe models performing fear-provoking behavior without experiencing adverse consequences. How avoidance responses can be extinguished without having been elicited can be best explained in terms of a dual-process theory of avoidance behavior. As

noted in the previous discussion of causal processes, conditioned aversive stimuli evoke emotional arousal that exerts some degree of control over instrumental responding. It would follow from this theory that if the arousal capacity of a threatening stimulus is extinguished, then both the motivation and one set of controlling stimuli for avoidance behavior are removed. Black (1958) has shown that neutralization of an aversive stimulus through classical extinction procedures alone markedly facilitates subsequent elimination of avoidance behavior.

Some early suggestive evidence for the occurrence of vicarious extinction is provided by Masserman (1943) and Jones (1924) in exploratory studies of the relative therapeutic efficacy of modeling procedures. Masserman produced strong feeding inhibitions in cats by pairing food approach responses to a conditioned

stimulus with aversive stimulation. In the remedial phase of the experiment, the inhibited animals observed a cagemate, who had never been negatively conditioned, exhibit prompt approach and feeding responses. The observers initially cowered at the presentation of the conditioned stimulus, but with continued exposure to their fearless companion, they advanced, at first hesitantly and then more boldly, to the goal box and consumed the food. Some of the animals, however, showed little reduction in avoidance behavior despite prolonged hunger and repeated modeling trials. Moreover, avoidance responses reappeared in a few of the animals after the fearless cat was removed, indicating that in the latter cases the modeling stimuli served merely as temporary external inhibitors of avoidance responses. Jones (1924) similarly obtained variable results in extinguishing children's phobic



responses by having them observe their peers behave in a nonanxious manner in the presence of the avoided objects.

Since nonoccurrence of anticipated aversive consequences is a requisite condition for fear extinction, the modeling displays most likely to have strong effects on fearful observers are ones in which performances that they regard as hazardous are repeatedly shown to be safe under a variety of threatening circumstances. However, if people are to be influenced by modeled behavior and its accompanying consequences, then the necessary observing responses must be elicited and maintained. Presentation of modeled approach responses toward the most threatening situation at the outset, as in the studies cited above, is likely to generate high levels of fear arousal in observers. To the extent that such conditions activate avoidance responses (such as

withdrawing or looking away) designed to reduce vicariously instigated distress, they will impede vicarious extinction. Therefore, the efficacy of vicarious extinction procedures may partly depend on the manner in which modeled performances are presented.

Avoidance responses can be consistently extinguished with minimal distress if persons are exposed to a graduated sequence of aversive stimuli that progressively approximates the most feared event. In the application of this stimulus generalization principle to vicarious extinction, persons initially observe a model responding in a positive manner to situations that have low arousal value. After emotional responses to attenuated threats have been extinguished, progressively more aversive modeling cues, which are weakened by generalization of anxiety extinction from preceding displays, are gradually

introduced and neutralized. Stimulus graduation is not a necessary condition for vicarious extinction, but it permits greater control over the change process and it entails less anxiety elicitation than approaches involving repeated exposure to modeled events having high threat value.

In addition to stimulus exposure variables, qualitative aspects of the modeled behavior are likely to influence vicarious extinction outcomes. The studies of vicarious emotional arousal reviewed earlier demonstrate that negative affective impressions by others can serve as powerful cues for arousing fear and avoidance in observers. One would therefore expect modeled approach responses accompanied by positive affective expressions to produce greater extinction effects than those accompanied by anxiety. For example, parental modeling efforts intended to overcome children's fears are frequently nullified

because the parents themselves suffer apprehensions and force themselves into tense contact with feared objects.

As part of a program of research designed to elucidate the phenomenon of vicarious extinction, several efficacious modeling procedures have been developed for modifying anxiety disorders. The first study in the series (Bandura, Grusec, & Menlove, 1967b) involved a stringent test of the degree to which strong avoidance behavior of long standing can be extinguished vicariously. It also explored the possibility that induction of positive affective responses in observers during exposure to potentially threatening modeling cues may expedite the vicarious extinction process.

Young children, who exhibited fear of dogs as revealed by parental ratings and an actual test of dog avoidance behavior, were assigned to one of

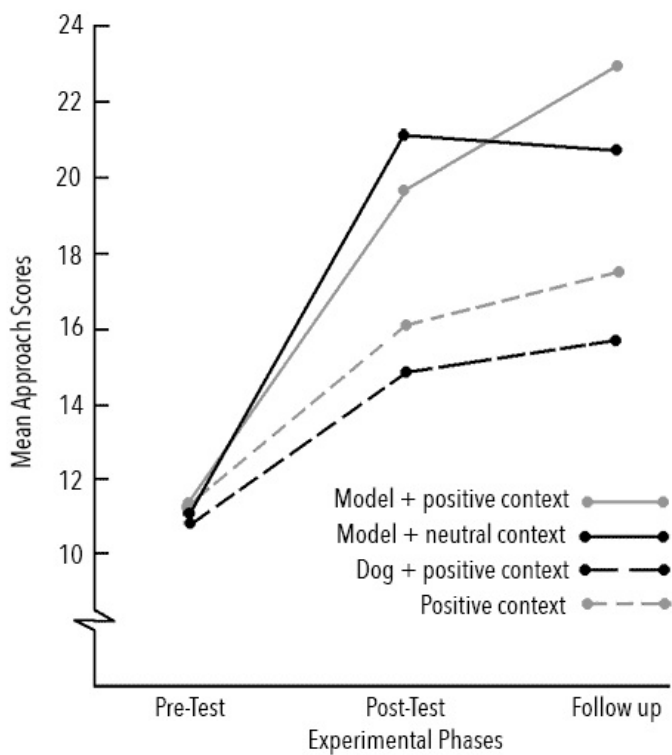
four treatment conditions. One group participated in eight brief sessions during which they observed a fearless peer model exhibit progressively more fear-provoking interactions with a dog. For these children, the modeled approach behavior was presented within a highly positive party context designed to counteract anxiety reactions. The fear-arousing properties of the modeled performances were gradually increased from session to session by varying simultaneously the physical restraints on the dog, the directness and intimacy of the modeled approach responses, and the duration of interaction between the model and his canine companion. A second group of children observed the same graduated modeled performances, but in a neutral context. In the two treatment conditions described the stimulus complex contained both modeling cues and repeated observation of the feared animal. Therefore, in order to measure the

effects of exposure to the threatening object itself, a third group of children observed the dog in the positive context but with the model absent. A fourth group participated in the positive activities but was never exposed to either the dog or the modeled displays.

Following completion of the treatment series, children were readministered the avoidance test consisting of the graded sequence of dog interaction tasks. They were asked, for example, to approach and to pet the dog, to release her from a playpen, to remove her leash, to feed her dog biscuits, and to spend a fixed period of time alone in the room with the animal. The final and most difficult set of tasks required the children to climb into the playpen with the dog and, after having locked the gate, to pet her and to remain alone with the animal under the confining, fear-arousing conditions.

Evidence that deviant behavior can be modified by a particular method is of limited therapeutic significance unless it can be demonstrated that established response patterns generalize to stimuli beyond those encountered in treatment, and that induced changes endure after the therapeutic conditions have been discontinued. Therefore, the children were readministered tests for avoidance behavior toward different dogs after completion of the treatment program, and again a month later.

The modeling procedure produced highly stable and generalized vicarious extinction of avoidance responses (Figure 3-10). The two groups of children who had observed the peer model interact fearlessly with the dog displayed significantly greater approach behavior toward both the experimental and an unfamiliar animal than did children in both the dog exposure and



*Figure 3-10.* Mean dog-approach scores achieved by children in each of the treatment conditions on the three different periods of assessment. Bandura, Grusec, & Menlove, 1967.



control conditions, who did not differ from each other. The positive context, however, did not contribute much to the favorable outcomes obtained. Further evidence for the effectiveness of this method is that 67 percent of the children receiving the modeling treatment were able to remain alone with the dog in the playpen. In contrast, this ultimate test was met by relatively few children in the two control conditions.

One would expect, from knowledge of generalization processes, that vicarious extinction effects would be partly determined by the variety of stimulus elements that are neutralized. Exposure to diverse models who display fearless behavior toward variant forms of the feared object without adverse consequences should produce thorough extinction of fear arousal, and consequently extensive reduction in avoidance behavior. On the other hand, observers whose

emotional responsiveness to a restricted set of modeled aversive elements is extinguished are apt to display weaker extinction effects. Moreover, under conditions where a series of aversive stimuli is presented only once, certain observer characteristics might also influence the extent to which emotional responses are extinguished. Observers who are highly susceptible to emotional arousal would be inclined to respond to threatening modeling displays with pronounced fear and might, therefore, show relatively strong resistance to vicarious extinction. Thus, emotionality might serve as an additional determinant of the rate at which avoidance behavior is reduced through modeling procedures.

The above propositions were tested in a second experiment (Bandura & Menlove, 1968) employing the same assessment methodology with children who displayed severe dog-avoidance

behavior. In this project, however, the performances of models were presented in a series of brief movies in order to test the efficacy of symbolic modeling techniques that might lend themselves conveniently to psychotherapeutic applications. One group of children, who participated in a single-model treatment, observed a fearless male model display the same progressively fear-provoking interactions with a dog as in the preceding experiment. The second group of children, receiving a multiple-model treatment, observed several different girls and boys of varying ages interacting positively with many dogs. The size and fearsomeness of the dogs increased progressively from that of small, nonthreatening dogs to more massive varieties. Children assigned to a control group were shown movies that had no canine characters.

The dog-approach scores obtained by children

in each of the three conditions in the pre-test, post-test, and follow-up phases of the experiment are shown graphically in Figure 3-11. Children who observed approach behavior modeled without adverse consequences to the performer displayed enduring and generalized reductions in avoidance behavior, whereas the controls showed no changes in this regard. Comparison of the incidence of terminal performances (remaining alone with the dog in the playpen) by children presented with the single-modeling display and those who witnessed the multiple modeling showed the latter form of treatment to be superior for completely eliminating dog-avoidance behavior. Although modeling was equally effective regardless of the severity of children's phobic behavior, those who manifested a wide variety of fears benefited somewhat less from the multiple-modeling treatment than children who had fewer

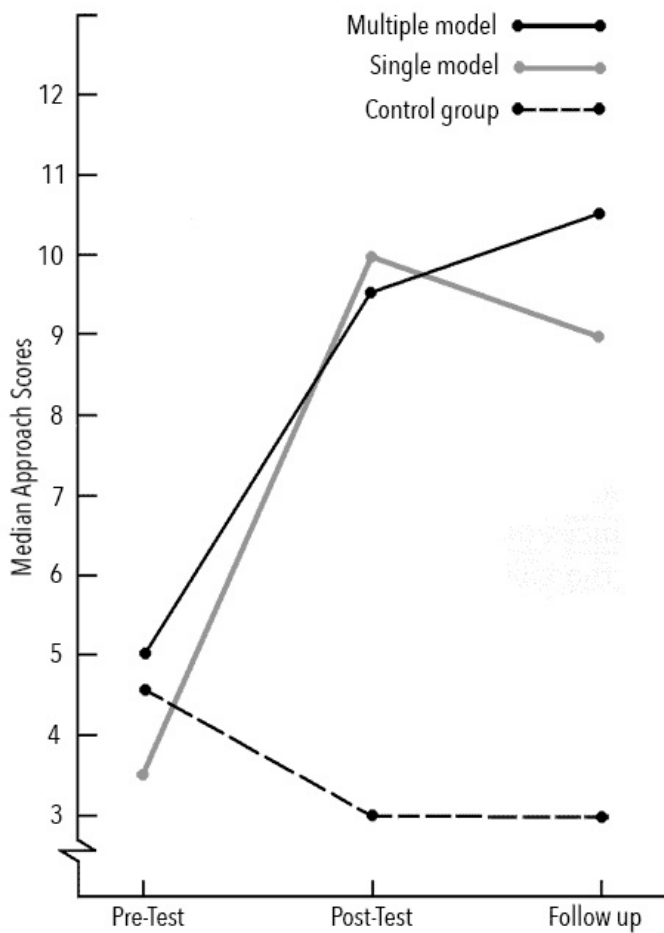


Figure 3-11. Median dog-approach scores achieved by children who received either single-model or multiple-model treatments, or who participated in a control condition. Bandura & Menlove, 1968.

fears.

As a further test of the therapeutic value of symbolic modeling, control children were administered the multiple-model treatment after the main experiment was completed. The control children, whose avoidance behavior remained unchanged in several tests conducted during the control period, displayed a sharp increase in dog-approach behavior following treatment. The increased boldness of one of the control children who had been subsequently treated is portrayed in Figure 3-12. The top frames show the model's dauntless behavior; the lower frames depict the child's fearless interaction with the animals, both of which she boldly corralled in the playpen, after the formal test.

Comparison of results of the two experiments suggests that symbolic modeling is less powerful



Figure 3-12. A girl who was apprehensive about dogs engaging in fearless interactions with dogs after exposure to the series of films in which a peer model displays progressively threatening interactions with dogs. Bandura & Menlove 1968.

than live demonstrations of essentially the same behavior. Although the single-model treatment effected significant reductions in children's avoidance responses, it did not sufficiently weaken their fears to enable them to carry out the threatening terminal approach behavior. However, the diminished efficacy of symbolic modeling can be offset by a broader sampling of models and aversive stimulus objects. Children who received the diverse modeling treatment not only showed continuous improvement in approach behavior between the post-test and follow-up periods, but also achieved terminal performances at rates comparable to equally avoidant children who, in the previous experiment observed fearless behavior performed by a single real-life model. Hill, Liebert, & Mott (1968) and Spiegler, Liebert, McMains, & Fernandez (1968) have also successfully eliminated persistent avoidance



behavior in children and adults through brief symbolic modeling, but in the latter studies the modeled performances are accompanied by a persuasive narrative and other fear-mitigating variables.

The potency of modeling influences in the transmission of anxiety is widely acknowledged, but their therapeutic value has sometimes been questioned (Jersild & Holmes, 1935) on the grounds that fears persist even though modeling frequently occurs under ordinary conditions of life. The effectiveness of any principle of learning depends not only on its validity but also on the manner in which it is implemented. Inconsistent, haphazard, and inadequately sequenced learning experiences will produce disappointing outcomes regardless of the cogency of the principle supposedly guiding the treatment.

In many instances weak fears are undoubtedly extinguished, or substantially reduced, through fortuitous naturalistic modeling. However, carefully planned modeling experiences are essential for the modification of more tenacious avoidance tendencies. There is some evidence (Bandura & Menlove, 1968) that parents of children who exhibit severe fearfulness make no attempts to overcome their children's fears because they suffer from similar apprehension. Consequently, they seldom model fearlessness and, on the infrequent occasions when they do, the modeling endeavors do not involve carefully graded presentation of threatening stimuli, without which this method is not only likely to be ineffective but may actually exacerbate anxiety reactions. A not uncommon domestic modeling scene, for example, is one in which a parent is busily petting a dog that is jumping about and

simultaneously bidding the child, who is clinging fearfully, to touch the bounding animal. By contrast, the modeling treatments, in addition to utilizing the principle of graduation to reduce fear arousal, involved concentrated exposures to modeling displays under protected observation conditions, and extensive variation of model characteristics, intimacy of approach behavior, and aversive properties of the feared object. Had the modeling sequences been presented in a widely dispersed and haphazard fashion and restricted to the more reserved petting responses by adults (whom children are likely to discriminate as better able to protect themselves), the vicarious extinction outcomes might have been relatively weak and unpredictable.

The third project (Bandura, Blanchard, & Bitter, 1969) employed an elaborate experimental design to assess the comparative efficacy of

modeling and desensitization treatment approaches for producing behavioral, affective, and attitudinal changes. The participants were adolescents and adults who suffered from snake phobias that, in most cases, unnecessarily restricted their activities and adversely affected their psychological functioning in various ways. Some of the people were unable to perform their jobs in situations in which there was any remote possibility that they might come into contact with snakes; others could not take part in recreational activities such as hunting, gardening, camping, or hiking, because of their dread of snakes; and still others avoided purchasing homes in rural areas, or experienced marked distress whenever they would be unexpectedly confronted with pet snakes in the course of their social or occupational activities.

In the initial phase of the experiment the

participants were administered a behavioral test that measured the strength of their avoidance of snakes. In addition, they completed a comprehensive fear inventory to determine whether elimination of fear of snakes is associated with concomitant changes in other areas of anxiety. Attitudinal ratings on several scales describing various encounters with snakes and on the evaluative dimensions of the semantic differential technique were also obtained. The latter measures were included to furnish data regarding the interesting but inadequately explored attitudinal effects of behavioral changes induced through social-learning methods.

The cases were individually matched on the basis of their avoidance behavior and assigned to one of four conditions. One group participated in a self-administered symbolic modeling treatment in which they observed a film depicting young

children, adolescents, and adults engaging in progressively threatening interactions with a large king snake (Figure 3-13). To increase even further the power of this method two other features were added: subjects were taught to induce and to maintain anxiety-inhibiting relaxation throughout the period of exposure, and they were permitted to regulate the rate of presentation of stimuli by means of remote control starting and reversing devices. The rationale for the second feature was that a self-regulated modeling treatment should permit greater control over extinction than one in which persons are exposed to a sequence of aversive cues without regard to their anxiety reactions. Subjects were instructed to stop the film whenever a particular modeled performance provoked anxiety, to reverse the film to the beginning of the aversive sequence, and to reinduce deep relaxation. They then reviewed the

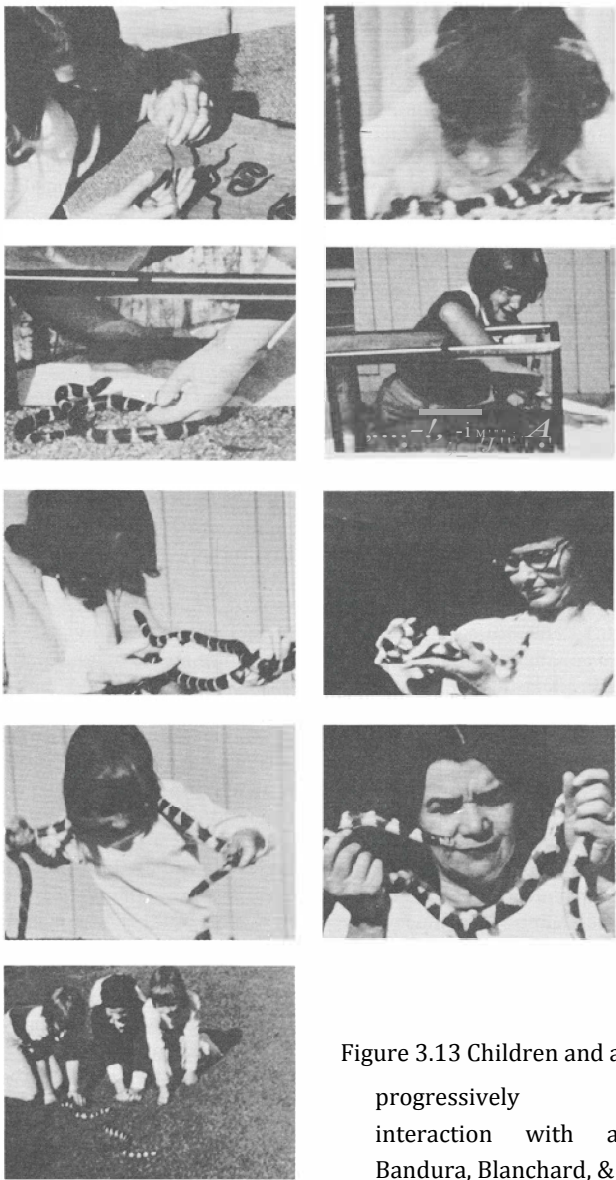


Figure 3.13 Children and adults modeling progressively fear-arousing interaction with a king snake. Bandura, Blanchard, & Rtitier, 1969.

threatening scene repeatedly in this manner until it was completely neutralized before proceeding to the next item in the graduated sequence. After subjects became skillful in handling the projector controls and the self-induction of relaxation, the experimenter absented himself from the situation, and the subjects conducted their own treatment until their anxieties to the depicted scenes were thoroughly extinguished.

The second group of subjects received a form of treatment combining graduated modeling with guided participation. The principal elements of this method were developed by Ritter (1968, 1969a) as contact desensitization. In the procedure employed in the present study, the model initially demonstrates the desired behavior under secure observational conditions, after which subjects are aided through further demonstration and joint performance to execute progressively



more difficult responses. Whenever subjects are unable to perform a given behavior after demonstration alone, they enact the feared activities concurrently with the model. The physical guidance is then gradually reduced until they are able to perform the behavior alone.

In the application of this method to the elimination of snake phobia, at each step the experimenter himself performed fearless behavior and gradually led subjects into touching, stroking, and then holding the snake's body with first gloved and then bare hands while he held the snake securely by the head and tail. If a subject was unable to touch the snake after ample demonstration, she was asked to place her hand on the experimenter's and to move her hand down gradually until it touched the snake's body. After subjects no longer felt any apprehension about touching the snake under these secure conditions,

anxieties about contact with the snake's head area and entwining tail were extinguished. The experimenter again performed the tasks fearlessly, and then he and the subject performed the responses jointly; as subjects became less fearful the experimenter gradually reduced his participation and control over the snake until subjects were able to hold the snake in their laps without assistance, to let the snake loose in the room and retrieve it, and to let it crawl freely over their bodies. Progress through the graded approach tasks was paced according to the subjects' apprehensiveness. When they reported being able to perform one activity with little or no fear, they were eased into a more difficult interaction.

Subjects assigned to the third group received the standard form of desensitization treatment devised by Wolpe (1958). In this procedure deep

relaxation was successively paired with imaginal representations of snakes arranged in order of increasing aversiveness. As in the other conditions, the treatment was continued until subjects' anxiety reactions were totally extinguished or the maximum time allotment was completed.

Subjects assigned to the control conditions participated in the behavioral and attitudinal assessments without intervening treatment. This group primarily furnished a control for changes resulting from repeated measurements. A relationship pseudotherapy was not employed because several previous investigations have shown that snake-avoidance behavior is unaffected by such experiences. In addition, the controls were later administered the symbolic modeling treatment without relaxation to evaluate its contribution to the changes produced by this

method.

Following completion of the treatment series the assessment procedures were readministered to all subjects. In order to determine the generality of extinction effects, half the subjects in each of the conditions were tested initially with the familiar brown-striped king snake and then with an unfamiliar crimson-spotched corn snake that was strikingly different in coloration; the remaining subjects were tested with the two snakes in the reverse order. The behavioral test consisted of a series of tasks requiring the subjects to approach, look at, touch, and hold a snake with bare and gloved hands; to remove the snake from its cage, let it loose in the room, and then replace it in the cage; to hold it within five inches of their faces; and finally to tolerate the snake in their laps while they held their hands passively at their sides. Immediately before and during the performance of

each task subjects rated the intensity of their fear arousal on a 10-interval scale to measure extinction of affective arousal accompanying specific approach responses.

As shown in Figure 3-14, control subjects remained unchanged in avoidance behavior, symbolic modeling and desensitization produced substantial reductions, and live modeling combined with guided participation eliminated snake phobias in virtually all subjects (92 percent). The modeling procedures not only extinguished avoidance responses of long standing, but they also neutralized the anxiety-arousing properties of the phobic stimuli. Both of the modeling treatments achieved marked decrements in anticipatory and performance anxiety. Although subjects who had received desensitization treatment also experienced less emotional arousal while performing snake-

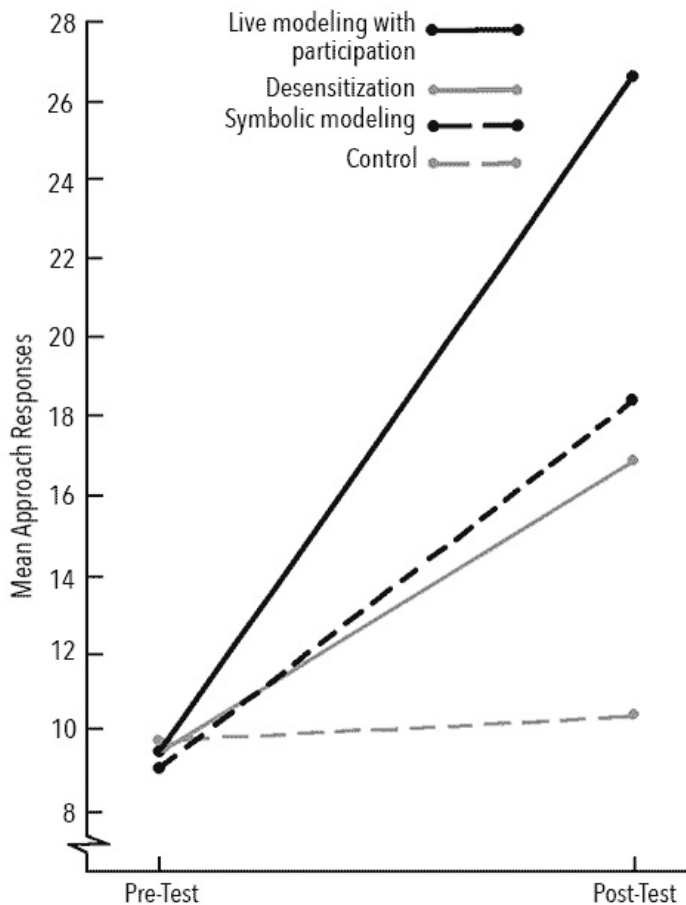


Figure 3-14. Mean number of snake-approach responses performed by subjects before and after receiving different treatments. Bandura, Blanchard, & Ritter, 1969.

approach responses, their magnitude of fear reduction was less than that of their counterparts in tire modeling conditions.

Findings of this experiment also reveal that applications of social-learning procedures have important attitudinal consequences. Both symbolic modeling and desensitization, which primarily involve extinction of negative affect aroused by aversive stimuli, produced favorable changes in attitudes toward snakes. Consistent with theoretical expectation, the treatment condition that reduced the anxiety-arousing properties of snakes and enabled subjects to engage in intimate interactions with snakes effected the greatest attitudinal changes. These findings will be given more detailed consideration in a later chapter specifically concerned with processes governing the modification of attitudes.

Analysis of the fear inventory scores disclosed some degree of fear reductions beyond the specifically treated phobia, the decrements being roughly proportional to the potency of the treatments employed. Nontreated controls showed no changes in either number or intensity of fears. Desensitization produced a decrease only in severity of fears toward other animals, whereas symbolic modeling was accompanied by a reduction in the number of animal fears and a general diminution in the intensity of anxiety in several other areas of functioning. Participant modeling, on the other hand, effected widespread fear reductions in relation to a variety of threats involving both interpersonal and nonsocial events. The transfer obtained reflects the operation of at least two somewhat different processes. The first involves generalization of extinction effects from treated stimuli to related anxiety sources. The



second entails positive reinforcement of a sense of capability through success, which mitigates emotional responses to potentially threatening situations. Having successfully overcome a phobia that had plagued them for most of their lives, subjects reported increased confidence that they could cope effectively with other fear-provoking events

After the posttreatment assessment, subjects in the control group received the symbolic modeling treatment without the relaxation component. Symbolic modeling alone achieved substantial decrements in fear arousal and avoidance behavior: 45 percent of the subjects exhibited terminal performances toward both snakes. No significant differences were found in approach behavior between subjects who were administered symbolic modeling alone and those who received symbolic modeling with relaxation.

However, subjects who paired modeling with relaxation required fewer reexposures to neutralize the aversive scenes, subsequently experienced less fear arousal while performing snake- approach responses, and showed greater positive changes in their attitudes toward snakes.

In order to determine, in cases involving only partial improvement, whether the deficiencies reside in the treatment method or in the subject, all persons who failed to achieve terminal performances were subsequently administered the participant modeling treatment. Snake-phobic behavior was thoroughly extinguished in all these subjects within a few brief sessions regardless of their age, sex, proneness to anxiety, or severity of avoidance behavior (Figure 3-15). Moreover, this supplementary treatment produced further reductions in fearfulness toward other types of threats, and also additional attitudinal changes.

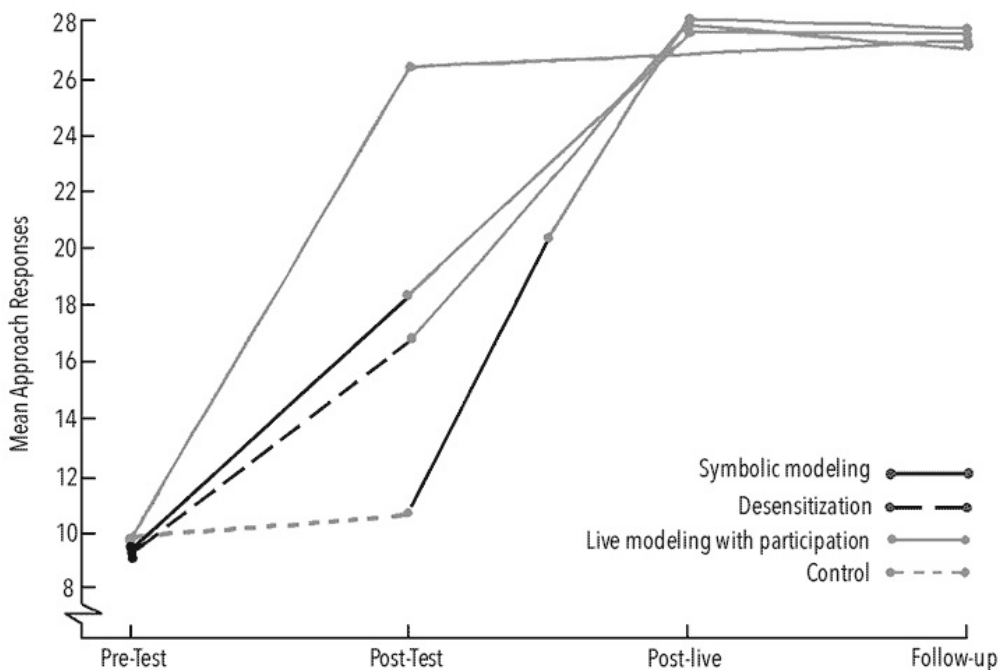


Figure 3-15. Mean number of snake-approach responses performed by subjects before and after (post-test) receiving different treatments. Control subjects were subsequently administered symbolic modeling treatment without relaxation. All subjects in the desensitization, symbolic modeling, and treated control conditions who failed to perform the terminal approach behavior were then given the live modeling and guided participation treatment (post- live). The snake-approach behavior of subjects in all four groups was measured again in a follow-up study conducted one month later. Bandura, Blanchard, & Ritter, 1969.

A one-month follow-up assessment revealed that the beneficial changes produced in behavior, attitudes, and emotional responsiveness were effectively maintained. The clients also displayed evidence that the behavioral improvements had generalized from therapeutic to real-life situations. They were able to participate in recreational activities, such as hunting, camping, hiking, and gardening, that they formerly avoided because of their dread of snakes; they no longer experienced marked distress when unexpectedly confronted with snakes in the course of their social or occupational activities; they were able to handle harmless snakes; and a few even served as model therapists for their own children and fainthearted friends.

Ritter (1968) has obtained similarly uniform success with group modeling procedures administered to children who displayed fear of

snakes. Groups of children participated in two 35-minute sessions in which they either merely observed several fearless children exhibit intimate interactions with a snake, or they received the participant modeling form of treatment during which the therapist displayed positive responses toward the snake and then gradually eased the children into performing the feared behavior. Snake phobias were completely extinguished in 53 percent of the children by modeling alone and in 80 percent of the children who received modeling combined with guided participation. The potency of this approach receives further confirmation by Rimm & Mahoney (1969), who successfully extinguished snake-avoidance behavior with participant modeling in adults who were unable to achieve behavioral improvement when offered increasing monetary rewards for performing a graduated series of approach responses.

Within the participant modeling treatment three processes are operative that might contribute in varying degrees to such striking psychological changes. These include observation of fearless behavior being repeatedly modeled without any unfavorable consequences, incidental information received about the feared objects, and direct personal contact with threatening objects that engender no adverse effects. In an experiment aimed at isolating the relative influence of these component variables, Blanchard (1969) matched subjects in terms of their snake-avoidance behavior and assigned them to one of four conditions. One subject in each quartet received the standard procedure, which includes the benefits of modeling, information, and guided interaction with a snake. A second subject simultaneously observed the modeling sessions and listened to the verbal interchanges, thus being

exposed to both modeling and informational influences. The third subject received only the modeling component, while the fourth, who merely participated in the testing procedures, experienced none of the constituent influences. Figure 3-16 summarizes the behavioral, affective, and attitudinal changes associated with these various treatment conditions. Modeling accounted for approximately 60 percent of the behavior change and 80 percent of the changes in attitudes and fear arousal; guided participation contributed the remaining increment. Informational influences, on the other hand, had no effect on any of the three response classes.

The guided participation component of the modeling approach under discussion contains two important aspects. Participant observers enact progressively more difficult responses and, if necessary, the model physically assists them in

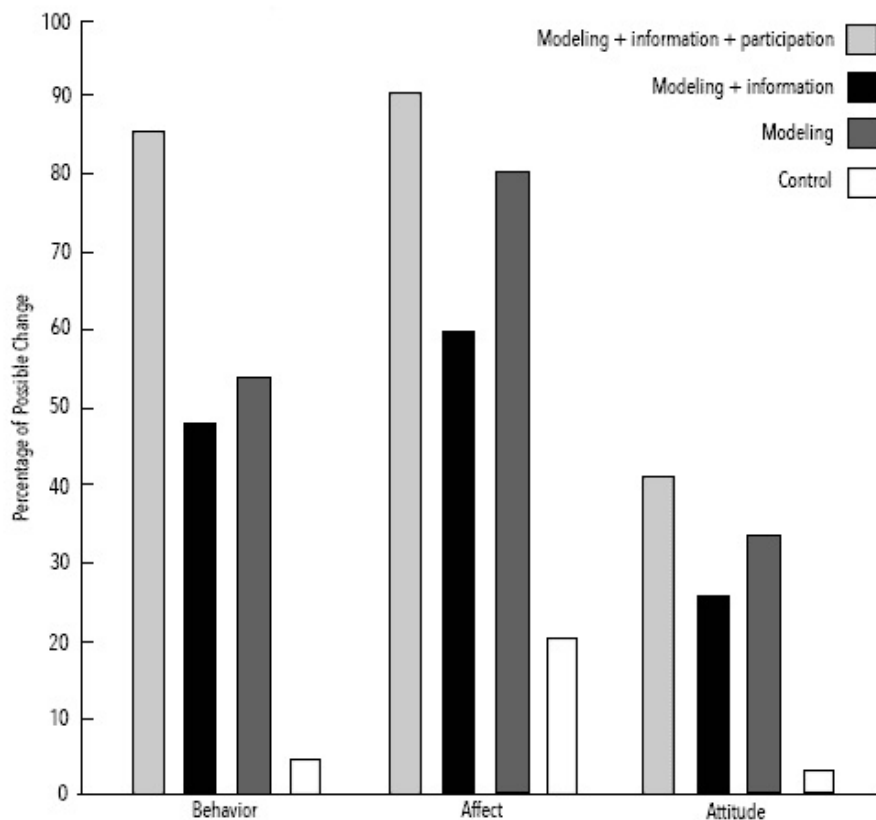


Figure 3-16. Percentage of change in approach behavior, fearfulness, and attitudes displayed by subjects who received different components of the modeling-guided participation treatment. Blanchard, 1969.



performing the behavior required at each step in the graded series of tasks. In order to evaluate the influence of these elements, Ritter (1969b) administered one of three treatments to acrophobic subjects during a single 35-minute session. For one group of subjects, the experimenter exhibited increasingly threatening climbing responses and physically assisted subjects in performing the same activities; in the second condition the experimenter demonstrated the behavior but only verbally guided subjects in enacting matching performances; a third group simply observed the demonstrated activities. At the completion of the session all subjects were readministered a behavioral test requiring them to climb to a series of heights atop a seven-story building. Modeling accompanied by physically guided performance produced greater changes than modeling with verbally guided enactment,

which in turn was superior to brief demonstration alone.

Further research is needed to clarify the mechanisms through which modeling procedures achieve extinction effects. Results of the experiment by Bandura, Blanchard, & Ritter (1969) provide tentative support for the proposition that avoidance behavior is reduced through vicarious extinction of fear arousal. During the symbolic modeling treatment subjects rated the intensity of their fear arousal to each modeled scene and to subsequent reexposures to the same stimuli. As shown in Figure 3-17, subjects showed a progressive decline in fear arousal with each successive exposure to modeled approach behavior. Subjects who combined symbolic modeling with relaxation experienced a greater reduction in fear on the second exposure to the aversive scenes than their counterparts who

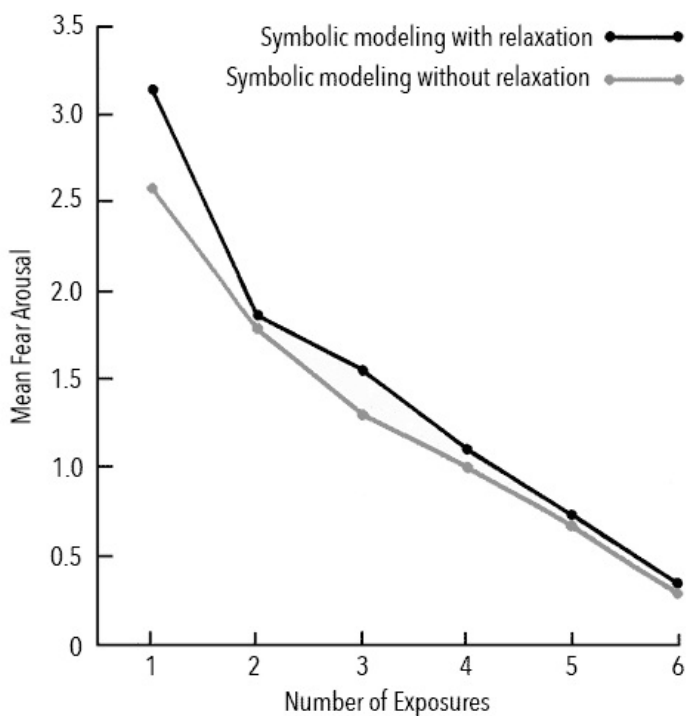


Figure 3-17. Mean level of fear arousal evoked by the modeling stimuli initially and by each subsequent exposure to the same filmed scenes in subjects receiving symbolic modeling with relaxation and symbolic modeling alone. The data are averaged across scenes at each exposure and plotted for the first six exposures only since subjects rarely required more than six presentations to neutralize any given scene. Bandura, Blanchard, & Ritter, 1969.

received symbolic modeling alone, but on subsequent reexposures the rate of fear extinction was essentially the same. The major theoretical assumption receives additional support from the study by Blanchard (1969), who also recorded decrements in fear arousal with successive reexposures to modeling stimuli. He found that the more thoroughly fear arousal was vicariously extinguished the greater was the reduction in avoidance behavior and the more generalized were the behavioral changes.

The process of change associated with the powerful procedure involving modeling combined with guided participation may be conceptualized as follows: Repeated modeling of approach responses decreases the arousal potential of aversive stimuli below the threshold for activating avoidance responses, thus enabling persons to engage, albeit somewhat anxiously, in approach

behavior. Direct contact with threats that are no longer objectively justified provides a variety of new experiences that, if favorable, further extinguish residual anxiety and avoidance tendencies. Without the benefit of prior vicarious extinction, the reinstatement of severely inhibited behavior generally requires a tedious and protracted program. After approach behavior toward formerly avoided objects has been fully restored the resultant new experiences give rise to substantial reorganization of attitudes.

The findings of studies reviewed above indicate that a powerful form of treatment is one in which therapeutic agents themselves model the desired behavior and arrange optimal conditions for clients to engage in similar activities until they can perform the behavior skillfully and fearlessly. The therapeutic outcomes associated with this approach are sufficiently promising to warrant its

further extension to other types of anxiety conditions. It is undoubtedly best suited for behavioral dysfunctions in which the feared consequences are inspectional.

### **Inhibitory and Disinhibitory Effects of Vicarious Experiences**

In addition to the acquisition of instrumental and emotional behaviors through observational experiences, exposure to modeled events may strengthen or weaken observers' inhibitions of well-learned response patterns. The occurrence of *inhibitory effects* is indicated when, as a function of observing negative response consequences to a model, observers show either decrements in the same class of behavior, or a general reduction of responsiveness. It should be noted that when the subject witnesses behavior that is subsequently punished, the response-facilitative effects of modeling cues are counteracted by the

suppressive effects of adverse outcomes. When these opposing influences are of comparable strength, persons who have observed modeled behavior punished and those who have had no exposure to the model may display an equally low incidence of response. Therefore, inhibitory effects can be best evaluated either by measuring response decrements from baseline levels or by comparison with performances of subjects who have observed the same modeled behavior without any consequences. In the experiment cited earlier (Bandura, 1965b), for example, children who had observed a model's aggressive behavior result in severe punishment performed significantly fewer matching responses than subjects who observed the same actions result either in reward or in no evident consequences. Indeed, the vicarious punishment produced virtually complete suppression of imitative

aggression in girls, whose inhibitions regarding physical forms of aggression are initially relatively strong. Further evidence for the suppressive effects of vicarious punishment is furnished by studies comparing consistent vicarious reward with successive reward and punishment of the model's behavior (Rosekrans & Hartup, 1967). Subsequent punishment tends to cancel the behavioral enhancement effects of rewarding consequences to the model.

The above studies demonstrate the inhibitory influence of observed negative outcomes to a model on the aggressive behavior of viewers. Walters and his associates (Parke & Walters, 1967; Walters, Leat, & Mezei, 1963; Walters, Parke, & Cane, 1965) have likewise shown that witnessing peer models punished for engaging in forbidden play activities increased observers' resistance to deviation when they were similarly



tempted with the prohibited objects. In a comparative study, Benton (1967) found that observers who witnessed others reprimanded for handling prohibited toys later showed the same amount of response inhibition as did the punished performers. The possible mechanisms through which vicarious punishment produces inhibitory effects are discussed in some detail in the introductory chapter of this book.

In many instances persons respond with self-punitive and self-devaluative reactions to behavior of their own that may be considered permissible, or even rewardable, by others. Results of investigations concerned with the social transmission of self-monitoring reinforcement systems (Bandura & Kupers, 1964; Bandura, Grusec, & Menlove, 1967b) provide evidence that witnessing punishments self-administered by a model inhibits observers from performing the

devalued behavior. Observation of self-administered reinforcements by a model have been shown by Porro (1968) to have similar effects on transgressive behavior. For children who viewed a filmed model exhibit self-approving responses to her transgressions, 80 percent subsequently handled toys they were forbidden to touch, whereas the transgression rate was only 20 percent for children who had observed the same model express self-critical reactions concerning her transgressions.

Behavioral restraints, established through previous modeling or direct aversive conditioning, can be reduced on the basis of observational experiences. Such *disinhibitory effects* are evident when observers display increases in socially disapproved behavior as a function of viewing models either rewarded or experiencing no adverse consequences for performing prohibited

responses. The reduction of inhibitions through modeling has been demonstrated most clearly in studies of intense physical forms of aggression that tend to be inhibited in viewers as a result of past social training (Bandura, Ross, & Ross, 1963a; Epstein, 1966; Walters & Llewellyn Thomas, 1963; Wheeler, 1966). It has also been shown (Grosser, Polansky, & Lippitt, 1951; Ross, 1962) that the incidence of other types of deviation by observers is significantly increased as a result of witnessing models' unpunished transgressions. On the other hand, conforming models tend to strengthen the observer's self-controlling responses and thereby to reduce conflictive behavior in tempting situations (Ross, 1962).

Blake and his associates (Blake, 1958) conducted investigations of some of the conditions determining the influence of noncompliant and conforming models on observers' inhibitions in

prohibition situations. In one study, Freed, Chandler, Mouton, & Blake (1955) found that, although exposure to a noncompliant model lowered students' resistance to deviation, transgressions occurred most frequently if the restriction was relatively weak and the model violated the prohibitory signs, whereas the combination of a strong restriction and a conforming model produced the lowest incidence of deviation. A second experiment (Kimbrell & Blake, 1958) demonstrated that the efficacy of modeling cues for modifying inhibitions varies with the observer's level of instigation to transgression. Under extreme provocation, subjects disregarded both the imposed restriction and the conforming model. However, under conditions where the instigation was not so strong as to force deviation, subjects who observed a conforming model displayed more compliant

behavior than others who witnessed a model violate the prohibition.

In naturalistic situations observers often actually see a model's transgressions rewarded or punished. At other times, however, they can only infer probable consequences from discriminative symbols and attributes of the model that tend to be correlated with differential reinforcements. The manner in which distinctive model characteristics signifying probable outcomes may increase a model's effectiveness in reducing inhibitions is illustrated in an experiment conducted by Lefkowitz, Blake, & Mouton (1955). Traffic-signal violations by a presumably high-status person attired in a freshly pressed suit, shined shoes, white shirt, and tie produced a higher pedestrian violation rate than the same transgression performed by the same model dressed in soiled, patched trousers, scuffed shoes, and a blue denim

shirt. The differential reduction in restraints noted in the latter experiment is probably attributable to the fact that transgressions by persons who occupy a high position in a prestige hierarchy are likely to be punished less frequently and less severely than those performed by low-status transgressors. The differential leniency is apt to be temporarily extended to the imitator as well, when the transgressive behavior is performed at the same time along with the deviating model.

Other discriminative properties of the model, such as age, sex, socioeconomic status, social power, ethnic background, and intellectual and vocational status, which are associated with predictable contingencies of reinforcement, may likewise influence the extent to which prohibited acts will be imitated. Vicarious reinforcement effects are, of course, considerably weakened or nullified under conditions where the model's

transgressive behavior is so markedly inappropriate to the sex (Dubanoski, 1967), status, or social role occupied by the observer that any imitative tendencies are personally suppressed.

Under most circumstances people readily adopt modeled responses that seem appropriate or have utilitarian value. However, in some problem-solving and achievement-like situations they display counter-matching tendencies for fear that imitative behavior will be considered cheating, copying, or subservience, and, therefore, socially disapproved (Luchins & Luchins, 1961; Patterson, Littman, & Brown, 1968; Schein, 1954). The inhibiting effect of anticipated negative sanctions for imitation can be overcome in observers through positive reinforcement of the model's responses (Clark, 1965).

It is interesting to note that, when a model

displays punishable behavior, absence of anticipated adverse consequences increases transgressive behavior in observers to the same degree as witnessing the model experience rewarding outcomes (Bandura, 1965b; Walters, Parke, & Cane, 1965). These findings suggest that nonreaction to formerly prohibited activities may take on, through contrast, positive significance. Similar contrast-of-reinforcement effects have been demonstrated in studies of direct reinforcement (Buchwald, 1959a, 1959b) in which nonreward following punishment had functioned analogously to a positive incentive, whereas nonreward following a series of rewards had operated as a negative reinforcer. In fact, even a weak positive incentive, when contrasted with more rewarding prior events, may acquire negative reinforcing value (Buchwald, 1960). The effects of witnessed outcomes on matching



behavior may therefore be determined to a large extent by the context in which the events occur and the customary sanctions associated with particular modeled response patterns.

Because previous studies have utilized deviant modes of behavior, which may be readily disinhibited through omission of negative consequences, the results provide no clear evidence for the occurrence of positive vicarious reinforcement. However, findings of an experiment (Bandura, Grusec, & Menlove, 1967b) involving modeled behavior that is positively sanctioned reveal that social rewards dispensed to a model augment matching responses compared to a condition in which the exemplified actions produce no evident consequences.

It is generally easier to disinhibit than to inhibit response patterns through vicarious

means. The main reason for this difference is that behavior which is customarily subject to negative sanctions is often positively reinforcing for the user, but it is socially suppressed for the convenience and well-being of others. Thus, for example, by violating prohibitions and restrictions people can gratify their immediate needs more directly and effectively than by following irksome institutionalized requirements; similarly, by adopting transgressive behavior they can gain access to attractive resources that might otherwise be denied them. Therefore, it does not require much successful deviant modeling to reduce vicariously the suppressive effects over personally rewarding behavior. On the other hand, inhibitory effects are far more difficult to establish and to sustain through either direct or vicarious punishment, when it involves relinquishing behaviors that lead to immediate and direct

reinforcement. Considering that exposure to deviant filmed models tends to weaken behavioral restraints, one would expect televised portrayals of successfully executed transgressions to have disinhibitory effects on viewers.

### **Response Facilitating Effects of Modeling Influences**

The behavior of models often serves merely as discriminative cues for observers in facilitating the expression of previously learned responses that ordinarily are not subject to negative sanctions. Laboratory and field studies have shown that the probability of occurrence of a wide variety of neutral and socially approved behavior can be substantially increased as a function of witnessing the action of real-life or symbolic models. Some of the behaviors that have been thus facilitated include volunteering one's services (Rosenbaum, 1956; Rosenbaum & Blake, 1955; Schachter & Hall,

1952), performing altruistic acts (Blake, Rosenbaum, & Duryea, 1955; Bryan & Test, 1967; Harris, 1968; Rosenhan & White, 1967), pledging oneself to a course of social action (Blake, Mouton, & Hain, 1956; Helson, Blake, Mouton, & Olmstead, 1956), assisting persons in distress (Bryan & Test, 1967), seeking relevant information (Krumboltz & Thoresen, 1964; Krumboltz, Varenhorst, & Thoresen, 1967), and selecting certain types of foods (Duncker, 1938; Barnwell, 1966), activities (Madsen, 1968), or articles (Bandura, Ross, & Ross, 1963b; Gelfand, 1962). Some of the most influential theoretical formulations of imitative processes (Miller & Dollard, 1941; Skinner, 1953) have, in fact, been almost exclusively concerned with the discriminative function of social cues. In the prototypic experiment the model's responses serve as the occasion upon which another organism is likely to be reinforced for performing

similar responses. After a period of exposure to differential reinforcement, imitative tendencies become strongly established; conversely, by reversing the contingencies so that matching responses are never reinforced but nonmatching behavior is consistently rewarded, imitativeness is reduced to a very low or zero level (Miller & Dollard, 1941).

Ethologists provide extensive documentation of the response-facilitating function of social cues in birds, fish, and mammals (Hall, 1963; Thorpe, 1956). Typically, the sight of certain responses performed by an animal elicits a similar or identical pattern of behavior in other members of the same species. This process is generally referred to as “social facilitation” or “behavioral contagion” when it is presumably determined by prior discriminative reinforcement, and “mimesis” when corresponding unconditioned response

patterns are supposedly instinctively aroused.

As Hinde (1953) points out, the occurrence of matching behavior in animals is often erroneously attributed to mimetic processes. In the first place, what appears to be mimetic behavior may involve response patterns that have, in fact, been established through prior social learning. Even in cases where matching behavior is clearly instinctive, it is frequently difficult to determine whether social cues constitute the critical eliciting stimuli. Readily discriminable “sign stimuli” (Tinbergen, 1951) or “releasers” (Thorpe, 1956) in the form of color displays, preparatory movement sequences, postural cues, and specific vocalizations frequently serve as unconditioned stimuli for complete patterns of instinctive behavior in other members of the species. Therefore, when appropriate releasing stimuli are displayed by a model during the performance of a

given activity, the corresponding responses on the part of observing animals may be primarily controlled by releasing stimuli, rather than the model's behavioral cues. Thus, for example, the white tail feathers of a bird flying upward can function as flight-eliciting stimuli for other members of a flock (Armstrong, 1942). A suitably feathered but nonflying artificial model might likewise succeed in getting a flock of birds airborne.

Pseudo-mimesis is also evident in instances where a model's behavior directs the observer's attention to environmental stimuli which, in turn, elicit similar innate response patterns. It has been shown, for example, that animals will consume considerably more food when they are fed in pairs than when they are fed alone, and satiated chickens will begin to eat at the sight of other birds feeding. It is entirely possible that in such

cases modeling cues primarily serve an *orienting function*, whereas the consummate responses of the sociable chicks are reinstated and maintained by the grain to which their attention has been redirected. The fact that the stimulus complex to which observing animals are responding frequently contains, in addition to social cues, releasing stimuli and other response-controlling environmental events complicates the identification and analysis of genuine mimetic phenomena.

The behavior of models may not only function as discriminative cues for similar responses, but also serve to direct the observers' attention to the particular stimulus objects manipulated by the performer (Crawford & Spence, 1939). As a consequence, observers may subsequently utilize the same objects to a greater extent, though not necessarily in an imitative way. In one modeling



experiment (Bandura, 1962), for example, the model pummeled a plastic doll with a mallet. Children who had observed this aggressive act later displayed significantly more behavior in which they pounded a peg board with the mallet than did both the control subjects and those who had viewed a nonaggressive model. *Stimulus enhancement effects* are distinguished from social facilitation in that the observer's behavior in the former case may bear little or no resemblance to the model's activities.

It is evident that observers are not equally affected by the actions of others with whom they may come into contact, nor are performers equally influential in evoking the types of behaviors in which they themselves are engaged. Susceptibility to social facilitation is largely governed by three sets of variables that have been discussed at length in preceding sections and elsewhere. These

include observer characteristics, the reinforcement contingencies associated with matching behavior in the particular setting, and the attributes of the model (Bandura, 1968; Campbell, 1961; Flanders, 1968).

In learning analyses of response facilitation as a function of model attributes (Miller & Dollard, 1941), stimulus generalization and differential reinforcement are utilized as the main explanatory principles. According to this interpretation, social models differ in the extent to which their behavior is likely to be successful in producing favorable outcomes. Hence, persons are most frequently rewarded for matching the behavior of models who are intelligent, who possess certain social and technical competencies, who command social power, and who, by virtue of their adroitness, occupy high positions in various status hierarchies. On the other hand, the behaviors of

models who are ineffectual, uninformed, and who have attained low vocational, intellectual, and social status, are apt to have considerably less utilitarian value. As a result of differential reinforcement for matching models who possess diverse attributes, the identifying characteristics gradually come to serve as discriminative stimuli that signify the probable consequences associated with behavior modeled by different social agents. Moreover, through the process of stimulus generalization, the effect of a model's prestige carries over from one area of behavior to another, and imitative responses tend to generalize to unfamiliar persons to the extent that they share similar characteristics with past reward-producing models.

The fact that social behavior is extensively under modeling stimulus control suggests that social phenomena can be partly regulated through

alteration of focal modeling influences. Lippitt and his colleagues (Lippitt, Polansky, & Rosen, 1952; Polansky, Lippitt, & Redl, 1950) have shown in several field studies that persons to whom is attributed high social power are the major sources of imitative behavior for other group members. These findings indicate that the attitudes and actions of entire groups can be modified most rapidly and pervasively by changing the conduct norms modeled by key sources of behavioral contagion, whereas attempts to alter the behavior of each member individually would prove exceedingly laborious and ineffectual.

### **Utilization of Modeling Principles in Planned Sociocultural Change**

Societies are continuously faced with the problem of introducing and gaining widespread acceptance of new practices designed to improve the quality of social life. This often involves

effecting changes in relatively circumscribed groups, as in the case of specific community development projects. At other times, however, far-reaching modifications are sought in economic, political, educational, and social practices that implicate the entire culture.

Most socially significant changes involve some negative consequences that are likely to serve initially as barriers to change. In the first place, people are required to expend a certain amount of their time, energy, and resources, that might otherwise be used for personal gratification, to learn new personal habits and modes of living. Second, the beneficial outcomes that may accrue from new response patterns usually cannot be clearly demonstrated until they have been tried over a period of time. Since innovations often prove unsuccessful and promoters generally overvalue their potentialities, people are

understandably apprehensive about forsaking existing behaviors of established utility for new ones involving possible superior but uncertain consequences. Most people, therefore, are reluctant to change their customary practices until they have observed new behaviors to be rewarding for more venturesome adopters. Third, conventional patterns are usually fortified by belief systems and moral codes that portend hazardous consequences for departures from socially sanctioned practices. Thus, for example, ineffective psychotherapeutic methods and folk medical systems are much more difficult to supplant when people are frightened by beliefs that innovative procedures will adversely affect them in ill-defined times and ways than when such foreboding beliefs have not been used to reinforce adherence to existing customs.

A fourth obstacle to the successful introduction

and diffusion of new modes of behavior is created by individuals in positions of authority who have a vested interest in preserving traditional prestige and power structures. They are apt to oppose actively any changes that may threaten their social and economic status, particularly if new programs are associated with outside agencies. Elite countercontrol is generally maintained through coercive pressures on less advantaged members who have the most to gain from changes and are therefore more receptive to new ways.

It is evident from the preceding discussion that if programs designed to alter sociocultural patterns are to meet with success, they must employ powerful change procedures to overcome the unfavorable conditions of reinforcement initially associated with unaccustomed practices. Attitude-change approaches have been employed extensively on the assumption that a modification

in the belief system is a vital prerequisite to acceptance of new behaviors. This strategy has proved only partially successful. A different approach, which concentrates on new alternatives rather than on hindrances, arranges optimal conditions for producing the desired behavioral changes. New practices that are beneficial to the user eventually become strongly established, and incongruent attitudes either will be modified to coincide with adopted behavior or they will be construed in a manner that is consistent with pre-existing beliefs.

Among the variety of methods available for accelerating social changes, modeling plays a highly influential role. If new response patterns are to be learned, potential adopters must be provided with models competent to display the desired behavior and who are especially likely to be emulated. Since vicarious reinforcement can



facilitate modeling, those exemplifying advocated patterns should be appropriately rewarded to demonstrate to others the benefits of new practices. In addition to modeling influences, new reinforcement contingencies must be introduced into the social system to favor adoption and continued performance of new behavior patterns (Holmberg, 1960). The beneficial effects of new skills and practices usually do not become apparent until they have been applied over an extended period. A change agent may, for example, be faced with the problem of getting skeptical people to institute and continue an irksome water purification project over a long period before they can obtain any clear evidence that it reduces infectious diseases. As Erasmus (1961) has noted, new cultural practices are most readily accepted when they produce immediate inspectional benefits and the causal relationship between new

behavior and advantageous outcomes can be easily verified. The issue of spectacularity and immediacy of results probably accounts for the preference of aggressive over less obstreperous means of forcing social changes.

In cases where the advantages to be gained from new behavior patterns are considerably delayed, it is necessary to provide subsidiary immediate incentives to sustain them until the long-term benefits occur and assume the reinforcing function. These temporary substitute rewards may involve financial compensations, social recognition, positions in new leadership hierarchies, and appropriate forms of status-conferring symbolic rewards. It is quite possible that many of the failures of cultural change programs that are attributed to resistance arising from conflicting beliefs in fact result from failure to provide emulative models and adequate

reinforcement supports for unaccustomed practices.

Another important factor that militates against social change is that persons who adopt the new patterns of behavior are often subjected to negative sanctions from envious peers and powerful officials whose vested interests may be jeopardized. This creates especially difficult problems when those in positions of power undermine and block social reforms that do not promote their own self-interests but are beneficial for, and desired by, less advantaged persons. Under these circumstances, little change will result unless persons who adopt new patterns are protected from maltreatment, and conditions are arranged so that the new practices provide some benefits for all concerned. This can be partly achieved through the use of socially interdependent contingencies in which a given

person's rewarding outcomes are determined by both the degree to which he performs the desired behavior and a composite of individual performances of the entire group. It will be shown in Chapter 4 how the addition of group reinforcement can favorably affect the performance of its members. However, if an organized minority continues to force compliance with traditional practices, then aversive controls must be applied. Desired objectives must be enforced through social legislation, and defiance must produce costly consequences. This presupposes that change agencies exercise some degree of control over the rewarding resources available to communities and their leadership, that they have the power to impose negative sanctions, and that they have sufficient social support to withstand the political repercussions of enforced changes. In an effort to avoid offending

the existing leadership, social agencies generally rely for the implementation of desired changes upon the traditional elite, who, unfortunately, often utilize such opportunities to further promote their self-interests.

Under conditions where advocates of innovations have no rewarding nor controlling power, they must first establish their value by demonstrating, in areas that engender little or no resistance, that the practices they advocate yield highly favorable outcomes. After they have thus enhanced their credibility and modeling potency they are in a more favorable position to attempt modifications that conflict with existing traditions and vested interests.

## Summary

This chapter is principally concerned with modeling processes whereby new modes of

behavior are acquired and existing response patterns are extensively modified through observation of other people's behavior and its consequences for them.

A multiprocess theory of observational learning was advanced, according to which modeled stimulus events are transformed and retained in imaginal and verbal memory codes. Later, reinstatement of these representational mediators, in conjunction with appropriate environmental cues, guide behavioral reproduction of matching responses. Performance of observationally learned responses is largely regulated by reinforcing outcomes that may be externally applied, self-administered, or vicariously experienced. Since modeling phenomena are controlled by several interrelated subprocesses, the absence of modeling effects in any given case may result from either failures in

sensory registration due to inadequate attention to relevant social cues, deficient symbolic coding of modeled events into functional mediators of overt behavior, retention decrements, motor deficiencies, or unfavorable conditions of reinforcement.

Modeling procedures have been extensively employed, with considerable success, for many purposes, especially for developing conceptual and interpersonal modes of behavior. In this approach agents of change model requisite behaviors and arrange optimal conditions for recipients to learn and to practice the activities until they are performed skillfully and spontaneously. In addition to the utilization of modeling principles for establishing social and cognitive competencies, emotional responsiveness can be conditioned and extinguished on a vicarious basis. In the case of vicarious affective

conditioning, exposure to a model's emotional reactions arouses in observers emotional responses which become conditioned, through contiguous association, to distinctive cues present in the situation. However, the degree of vicarious responsiveness is partly dependent upon an intermediary self-stimulation process involving symbolic representation of similar consequences occurring to oneself in the same situation. Affective expressions of a model are most likely to elicit high self-arousal in observers under conditions where the participants have experienced similar pleasurable or painful experiences.

Vicarious extinction of emotional behavior is achieved by exposing an observer to modeled events in which a performer's approach responses toward feared objects do not produce adverse effects or may engender positive consequences.



Studies of vicarious extinction reveal that this procedure, particularly when combined with guided participation, not only produces enduring and generalized reductions in tenacious avoidance behavior, but it also induces long-lasting attitudinal changes and decrements in fearfulness toward objects that were never specifically included in the treatment program. A major factor in modeling procedures that expedites behavioral changes is assumed to involve vicarious extinction of arousal reactions below the level for activating avoidance responses, thus enabling persons to perform approach behaviors. The fact that elimination of the arousal potential of threatening stimuli through a nonresponse extinction procedure subsequently reduces avoidance behavior provides further support for a dual-process learning theory in which classically conditioned effects partly govern instrumentally

learned responses.

Exposure to modeled events may also strengthen or weaken observers' inhibitions of existing patterns of behavior. The occurrence of these inhibitory and disinhibitory effects is mainly determined by actual or inferred response consequences to the model. Positive reinforcement of models' actions generally facilitates similar behavior in observers if it is appropriate to their social role and status, whereas observation of punishing consequences to models tends to inhibit similar responsiveness in others. These vicarious reinforcement effects may result from the information conveyed by the model's outcomes as to what constitutes permissible or punishable actions in particular situations, from motivational increases created by witnessing others receive desired incentives, from changes in model status produced by disparaging

or laudatory social reactions, and from vicarious acquisition or extinction of emotional responses through exposure to the affective expressions of models undergoing rewarding or punishing experiences.

The behavior of models often functions merely as discriminative stimuli in facilitating the expression by others of similar behaviors that ordinarily are not subject to negative sanctions and therefore do not involve inhibitory mechanisms. Social models differ considerably in the extent to which their behavior is likely to be successful in producing favorable outcomes. As a result of repeated differential reinforcement for matching models who differ in intelligence, age, socioeconomic status, social and vocational competencies, prestige and power, model attributes that signify probable consequences for exemplified behavior determine in large part

which models will have greatest response-facilitating effects. Because social behavior is extensively under modeling stimulus control, the attitudes and actions of groups can be modified by altering the conduct norms modeled by major sources of behavioral contagion.

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## Positive Control

In the modification of psychological conditions that reflect primarily behavioral deficits, the development of complex repertoires of behavior and the strengthening of existing responses constitute important objectives. Moreover, after behavior has been well established, appropriate conditions must be created to maintain it at a satisfactory level. Reinforcement procedures are best suited for these purposes.

It has been amply demonstrated that behavior is controlled to a large extent by its consequences. Any attempts, therefore, to produce enduring changes in responsiveness must alter the incidence, and often the nature, of reinforcing

outcomes that are customarily produced by given modes of response. There are two broad classes of consequences—rewarding and punishing events—that serve as important determinants of behavior. The present chapter is mainly concerned with the establishment of response patterns and their maintenance through systematic application of positive reinforcement.

### **Theoretical Interpretations of Reinforcement Processes**

When a given response is followed by a positively reinforcing consequence, it increases the likelihood that the response will be repeated on subsequent occasions. Although there is little dispute about the validity of the empirical principle of reinforcement, numerous alternative explanations have been proposed for the manner in which reinforcement produces its effects (Hilgard & Bower, 1966; Kimble, 1961). The

various theoretical approaches differ in the extent to which they consider drive states, stimulus events, or response properties to be the critical factors governing reinforcement processes.

### *DRIVE-REDUCTION HYPOTHESIS*

One influential theory of reinforcement (Hull, 1943) assumes that the effects of reinforcing consequences are produced by need-reduction. In interpreting the process of primary reinforcement, it is assumed that deprivation or painful stimulation produces a physiological need giving rise to a drive that activates behavior. A reinforcing event is one that reduces a drive by satisfying or removing the need. A more comprehensive form of this drive-reduction view was advanced by Miller & Dollard (1941), who emphasize the activating properties of strong stimuli rather than needs. According to their

stimulus-reduction theory, any stimulation, regardless of whether it is based upon a need, can become a drive if it is made sufficiently intense; reduction of aversive stimulation has reinforcing effects.

There exists an extensive body of evidence that drive-inducing operations greatly enhance the potency of reinforcing stimuli, and that attenuation or termination of aversive stimulation can have strong reinforcing effects on behavior. The homeostatic conception of reinforcement receives some further support from studies demonstrating that procedures designed to alter physiological states directly, while excluding secondary reinforcement deriving from sensory stimulation and consummatory responses, can function as effective reinforcers for overt behavior. Food-deprived animals, for example, learn to make responses that result in nutrients

being delivered directly into their stomachs (Miller & Kessen, 1952) or glucose being injected intravenously (Chambers, 1956; Coppock & Chambers, 1954) contingent upon correct performances. Similarly, intravenous insulin injections, which produce rapid decreases in blood sugar level, have a punishing effect upon behavior (Coppock, Headlee, & Hood, 1953).

The assumption that reinforcement requires drive-reduction was initially questioned by experiments demonstrating that nonnutritive saccharin reinforced behavior (Sheffield & Roby, 1950). Similarly, copulation without ejaculation, which produces no reduction in tension (Sheffield, Wulff, & Backer, 1951; Whalen, 1961), could serve as an effective reward. However, the conclusions drawn from these findings regarding the validity of the drive-reduction theory of reinforcement have been challenged by Miller (1963), on the

basis of evidence that prefeeding hungry animals with saccharin does in fact reduce their subsequent consumption of food, and on the assumption that sex may not involve a unitary drive that can be reduced only by ejaculation. In replying to criticisms of drive-reduction theory on the grounds that people often engage in behavior that produces heightened stimulation, Brown (1955) pointed out that drive cannot be defined solely in terms of intensity of stimulation. The reason for this is that strong stimuli can lose their activating function if presented in gradually increasing values, if they have been associated with rewarding experiences, or if they become discriminative for less active responding. Therefore, Brown cogently argues that definition of a drive stimulus must include, in addition to its intensity, other criteria such as the amount and type of previous experience with the stimulus, and

the manner and context in which it is presented.

It should be noted in passing that, although results from experiments involving fistula feeding and nutritive injections demonstrate that reduction of a physiological need can be sufficient to reinforce an instrumental response, such studies do not necessarily establish the physiological bases of reinforcement. Any such physiological explanation may ultimately be carried to the point where reinforcing effects are interpreted in terms of intracellular changes. While relationships established at the molecular level have considerable theoretical significance regarding the basic mechanisms of reinforcement, knowledge of this type is of limited usefulness in devising incentive programs, since it is extremely unlikely that in social practice one would alter neurophysiological events directly in order to influence responsiveness.



### *SENSORY-STIMULATION HYPOTHESIS*

Although some reinforcement effects may be governed by visceral drive states, there are many reinforcing conditions that do not appear to involve reduction of physiological needs or removal of aversive stimuli, unless one were to invoke a host of sensory and activity drives. Animals will learn to perform responses that produce visual and auditory stimulation or opportunities to engage in manipulative and exploratory activities (Barnes & Baron, 1961; Butler, 1958a; Kish, 1966; Miles, 1958). A number of studies, conducted principally with infants (Rheingold, Stanley, & Doyle, 1964) and children (Odom, 1964; Stevenson & Odom, 1964), have likewise shown that visual and auditory feedback can be effective in modifying and sustaining behavior over time. These findings would seem to indicate that much human behavior—particularly

approach, attending, and manipulative responses —is reinforced by the sensory feedback that is automatically produced.

Investigations of factors that might contribute to the reinforcing properties of auditory and visual events have revealed that novel and complex stimuli function as more effective reinforcers than simple and familiar stimulus events. The data furthermore indicate that, as is the case with biologically related incentives, the potency of sensory reinforcers is increased by deprivation of sensory experiences and diminished by stimulus-satiation operations.

The existence of sensory reinforcement has been convincingly demonstrated, but the nature of the mechanisms underlying the phenomenon is by no means clear. Berlyne (1960) and Harlow (1953) have posited curiosity, manipulative, and

exploratory drives that are presumed to be elicited by external, novel stimuli and reduced by continuous exposure to such stimulation. In the prototypic experiment, animals placed in a lightproof and sound-attenuated box learn to perform discriminative responses that open a door allowing them either to view the outside environment for a few minutes, or to press levers for auditory stimulation. The major difficulty in accounting for the animals' behavior in terms of an externally aroused curiosity drive is that the animals are not exposed to the novel stimuli until after the responses, of which the stimuli are the presumed cause, have been successfully executed. As Brown (1953) points out, "If visual exploration provided the only significant motive, then the monkeys must have been *unmotivated until the window was opened following a correct response*. But the monkeys did appear to be motivated. One

might conclude, therefore, that the effective motivation was aroused *before* the monkeys were allowed to see, not as a consequence of seeing [p. 54].” The more distally occurring visual and auditory experiences can serve as reinforcing events, but it is evident that the instrumental responses must be activated by antecedent stimuli.

Both Miller (Myers & Miller, 1954) and Mowrer (1960) have reinterpreted sensory reinforcement effects in terms of reduction of an aversive drive. They assume that monotony produces boredom, which has aversive properties, and that close confinement and drastic reduction of sensory contact with one’s environment can generate considerable apprehension. Miller and Mowrer therefore contend that, if changes in sensory stimulation are boredom-relieving or anxiety-reducing, then behavior is reinforced by

its sensory feedback in a manner consistent with drive-reduction theory. One would encounter no problems in testing the efficacy of sensory reinforcers under conditions that do not arouse anxiety, but it is exceedingly difficult to maintain a low or unvaried level of sensory input, which in large part determines the incentive value of specific auditory and visual stimuli, without producing concomitant boredom. The problem of determining whether sensory reinforcement effects are attributable to elimination of boredom or to inherent rewarding properties of novel stimuli is further complicated by the fact that most exploratory activities undergo rapid satiation.

Some investigators (Fox, 1962; Isaac, 1962; Leuba, 1955) have offered a neurophysiological explanation of sensory reinforcement that is similar in some respects to the operation of homeostatic drives. Based on evidence that

prolonged deprivation of sensory input results in psychological dysfunctioning, it is assumed that for normal physiological functioning the organism must maintain an optimal level of sensory stimulation. Therefore, subjects will perform instrumental responses to increase sensory input if there is a deficit, and conversely, they will work to reduce sensory stimulation if it exceeds the optimal level.

It is difficult to explain, on the basis of a drive for optimal quanta of sensory stimulation, why animals confined in a drab, light-proof, sound-attenuated box will work unflaggingly for certain sights and sounds but will refrain from performing responses that are instrumental in producing negatively valenced stimuli in the same sensory modalities. Thus, monkeys perform responses for the opportunity to view other monkeys, movies, electric trains, and to hear sounds of a monkey

colony in the outside environment, whereas the sight or sound of a dog, and distress vocalizations, readily suppress their exploratory tendencies (Butler, 1954; 1958b). The findings clearly indicate that the *content* rather than the *amount* of sensory input may be the critical factor determining the incidence of exploratory responses. Studies in which both the amount of sensory stimulation and the conditioned valence of auditory or visual stimuli are systematically manipulated would provide the basis for determining whether sensory reinforcement effects are best interpreted in terms of principles of optimal stimulation, secondary reinforcement, or their interactive effect.

The existence of sensory, manipulative, and exploratory drives is usually inferred from response patterns rather than defined in terms of antecedent conditions for producing the specific

drive. Unless drives and responses are operationally differentiated, there are no limits to the proliferation of drive states which can be more economically explained in terms of response dispositions. If independent criteria are not employed, new drives or motives may be invoked for each reinforcing event or prevalent behavior.

#### *PREPOTENT-RESPONSE HYPOTHESIS*

In describing the essential properties of reinforcing events, emphasis has usually been placed on the nature of the reinforcing stimuli (e.g., food, money, novel sensations, social attention and approval, intracranial stimulation, etc.), and their efficacy under varying conditions of deprivation. On the basis of results from an ingenious series of experiments, Premack (1965) has presented an explanation of reinforcement that emphasizes the *reinforcing response* rather



than the *reinforcing stimulus*. In these investigations the reinforcement values of different activities are estimated from the duration for which subjects spontaneously engage in particular behaviors when no time or response restrictions exist. If the opportunity to engage in the more rewarding activity is made conditional upon the prior performance of low probability behaviors, then the latter responses increase in frequency. Based on these findings, Premack has proposed the following principle of reinforcement: For any pair of activities, the more probable one will reinforce the less probable one.

Data observed by Premack indicate that, under appropriate conditions, almost any activity can function as an effective reinforcer. Thus, animals that prefer running to eating will perform consummatory responses in order to release an activity wheel that permits them to sprint,

whereas subjects that would rather eat than run will engage in running behavior in order to gain access to food. Moreover, by manipulating deprivational conditions, the reinforcement relation between activities can be easily reversed, with the result that reinforcing events are converted into reinforceable events. To continue with the previous example, eating will reinforce running behavior in food-deprived animals, but after they have been fed and their mobility restricted, eating can serve as the instrumental activity that is reinforced by opportunities to run. Reversibility is apparently a general phenomenon extending even to intracranial self-stimulation, which can serve as an extremely powerful reinforcer of instrumental responses. When the probability of drinking, for example, is greater than brain stimulation, drinking reinforces intracranial self-stimulation (ICS), and conversely,

in animals for which ICS is more rewarding than drinking, making ICS conditional upon drinking produces an increase in drinking behavior (Holstein & Hundt, 1965). If further research should demonstrate that electrical stimulation of the limbic system, which is assumed to be inherently reinforcing, is itself reinforce- able by contingent response events, then one might question the existence of an integrated brain center that governs all reinforcement. As Premack points out, one would have to locate another region of central reinforcement in cases where intracranial stimulation is increased by its instrumental value in producing more highly preferred response events. It is also unclear how explanations in terms of central reinforcement focuses can readily account for the reversal of instrumental and rewarding functions of any given activity. Indeed, the experimental evidence

convincingly demonstrates that reinforcement is a *relational* rather than an *absolute* property of the activity. A particular response event will have no reinforcing potency in relation to a more highly preferred activity, but it will function as an effective positive reinforcer when paired with responses of lesser value.

When reinforcing events are defined in terms of their effects—as stimuli that increase the probability of preceding responses—the empirical principle of reinforcement is open to the criticism of circularity. In rebuttal, Meehl (1950) contended that this criticism ignores the fact that reinforcers are transsituational, that is, a stimulus that has been found to be effective in reinforcing one response can be used predictively to reinforce other types of responses. The findings discussed above, however, indicate that the assumption of transsituationality is valid only under certain

limiting conditions because most stimuli do not possess generalized reinforcing potency. Premack solves the circularity problem by defining the reinforcing power of different consequences independently of response changes.

It appears highly doubtful that the reinforcing effects of prepotent responses are interpretable as drive-reduction processes or sensory drive mechanisms. There has been virtually no speculation or research concerning the specific aspects of prepotency that contribute to its reinforcing potential, and, therefore, the associated processes remain obscure. Although the prepotent-response principle can encompass a wide range of conditions which function as effective reinforcers, it cannot account for the efficacy of consequences that do not involve performance of responses. Thus in cases where behavior is strengthened either by nutrients

delivered directly into the stomach or blood stream, or by more conventional consequences such as praise, positive attention, monetary rewards, or various types of sensory feedback, it appears difficult to apply the prepotent- response principle. Even when pairs of responses are arranged in a contingent relationship, correct specification of the reinforcing event is complicated by the fact that changes in sensory stimulation accompanying the behavior rather than the activity per se may be primarily responsible for the reinforcement effects. The relative contribution of sensory consequences of behavior to the total reinforcing effect can be assessed by vicarious paradigms in which the responses of a yoked observer are maintained by witnessing the changes in visual and auditory stimulation produced by a performer's actions.

It is evident from this brief review that

exceedingly diverse events, which have no apparent common properties, can all serve a reinforcing function. A theory of reinforcement that adequately integrates these heterogeneous consequences into a unified system has yet to be formulated. Considering that the reinforcing potency of a given event is relationally determined, a comprehensive theory of reinforcement cannot be based on properties inherent in the event itself. The experimental findings nevertheless indicate that better use can be made of a wider range of reinforcers than is generally employed in programs of behavioral change.

#### *INCENTIVE FUNCTION OF REINFORCERS*

The discussion thus far has been primarily concerned with the performance-enhancing effects of various contingent events, whether they

be drive-reducing, sensory, or in the form of prepotent activities. Two different explanations have been proposed as to how reinforcing consequences affect behavior. Some reinforcement theories assume that positive response outcomes have a direct strengthening effect on stimulus-response associations and that therefore learning occurs only as a consequence of reinforcement. Contiguity theory, on the other hand, distinguishes between acquisition and performance. Learning, according to this view, can occur through contiguous association of stimulus events and accompanying cognitive processes in the absence of immediate rewards and punishments. To test for contiguity learning a variety of experimental paradigms have been employed in each of which either overt responding or reinforcement, both necessary for associative strengthening, are eliminated. The overall results of these



investigations provide substantial support for the contiguity principle. In sensory preconditioning studies, for example, if one of two neutral stimuli that have been repeatedly paired is then conditioned to a response, the second stimulus also becomes capable of evoking the response without any direct reinforced association (Seidel, 1959). Many experiments, utilizing surgical and curare procedures to prevent motor responding during acquisition or extinction, have consistently obtained learning in the absence of overt responding. Similarly, innumerable modeling studies have shown that new response patterns can be acquired observationally without observers themselves either engaging in any overt activity or receiving any reinforcing stimulation.

Although response acquisition is largely dependent upon stimulus contiguity, reinforcement variables are considered to be

highly influential in regulating performance. However, in this more cognitive interpretation of behavioral change processes, reinforcers are assumed to affect performance primarily through their informative and incentive functions. Reinforcing consequences convey information about the type of behavior required in a given situation. Anticipation of desired rewards for performing the requisite behaviors can increase and maintain appropriate responsiveness even though presentation of the earned reinforcers may be delayed for a considerable time. Indeed, in most instances persons are motivated by, and work for, anticipated rewards rather than immediate reinforcing outcomes.

Contiguous occurrence of stimulus events is no assurance that they will necessarily be observed. Anticipated rewards can influence to some degree what people will pay attention to. Thus by

arousing, focusing, and sustaining attentiveness to relevant stimulus events, which is necessary for learning, reinforcers may serve as indirect determinants of response acquisition. The major controversy between learning theories is therefore concerned with the manner in which reinforcement affects learning rather than with whether reinforcement plays a role in the acquisition process.

The basic assumption that reinforcement is a prerequisite for learning is difficult to refute empirically. Demonstrations of learning through contiguity alone are often discounted by invoking obscure or undetected sources of reinforcement that are presumed to be operative in the situation. A purely cognitive interpretation of reinforcement effects is, however, challenged by results of experiments with infrahuman subjects in which reinforcing nutrients are introduced either

directly into the stomach or intravenously. In these instances the reinforcers are not observable and consequently, their response-enhancing effects cannot be attributed to informative or incentive factors. The overall evidence would seem to indicate that reinforcers can have both associative strengthening and performance-enhancing effects.

## **Essential Components of Reinforcement Practices**

There are three essential features in the successful application of reinforcement procedures. First, one must select reinforcers that are sufficiently powerful and durable to maintain responsiveness over long periods while complex patterns of behavior are being established and strengthened. Second, the reinforcing events must be made contingent upon the desired behavior if they are to be optimally effective. And third, a

reliable procedure for eliciting or inducing the desired response patterns is essential; otherwise, if they rarely or never occur there will be few opportunities to influence them through contingent reinforcement.

### *INCENTIVE SYSTEM*

It is generally acknowledged that motivation is crucial for behavioral change. In most personality theories motivation is conceptualized as enduring energy systems within the organism, variously labeled as needs, drives, or motives, which impel and sustain responsiveness. When motivation is treated as though it were a persisting internal entity, this type of orientation not only impedes development of efficacious change programs, but it creates pessimism about the possibility of treating persons who presumably lack the requisite motivation. It also provides a convenient

rationale for failures that primarily result from reliance upon weak methods of behavioral control.

Incentive theories of motivation assume that behavior is largely activated by anticipation of reinforcing consequences. From this point of view, motivation can be regulated through arrangement of incentive conditions and by means of satiation, deprivation, and conditioning operations that affect the relative efficacy of various reinforcers at any given time. Thus, for example, in producing intellectual strivings in children who display little interest in academic pursuits, one would arrange favorable conditions of reinforcement with respect to achievement behavior rather than attempt to create in some ill-defined way an achievement motive, the presence of which is typically inferred from the behaviors it presumably actuates.

Given that performance is extensively determined by reinforcement conditions, the development and selection of an effective incentive system is of central importance. The influential role of reinforcement variables in behavioral change is illustrated by results of experiments comparing responsiveness with and without contingent reinforcement. As part of a program of research on reading, for example, Staats and his colleagues (Staats, Staats, Schutz, & Wolf, 1962) presented to preschool children programmed material designed to teach them to read words individually and then combined into short sentences. When the children were praised for correct responses but were offered no extrinsic rewards, they worked at the reading tasks for 15 to 20 minutes and then became bored and restless and asked to leave. After they no longer wished to remain in the situation, tangible rewards,

consisting of candy treats, trinkets, and tokens that could be exchanged for attractive toys, were introduced. Under the influence of the positive reinforcers, made conditional upon reading achievements, the children's limited "attention span" suddenly expanded, and they not only worked enthusiastically at the reading task for 45 minutes, but participated actively in additional sessions.

A second group of four-year-olds originally performed the reading task under reinforcement conditions for two sessions, then the rewards were discontinued until the children ceased to participate, following which extrinsic incentives were again reinstated. During the initial reinforced sessions the children attended closely to the reading material and worked actively at acquiring new reading responses. When reinforcers were withdrawn, however, the children's attention,



participation, and reading achievements rapidly deteriorated. Staats (1965) has further demonstrated that, given an appropriate incentive system, even very young children will engage in complex learning activities with sustained interest over an extended series of sessions.

The marked changes in positive responsiveness noted in the above studies illustrate how low persistence on academic tasks resulting from inadequate incentives is often erroneously attributed to basic deficits in the child in the form of short attention span or low frustration threshold. Levin & Simmons (1962) similarly found that low persistence in hyper-aggressive boys, which is generally interpreted in clinical theory (Redl & Wineman, 1951) as reflecting high impulsivity, weak ego control, and a generalized inability to tolerate frustration, may in fact be due to inadequate positive

reinforcement. When boys were merely praised for appropriate responses, they rapidly ceased responding, sometimes in a highly disruptive fashion, by tossing the material out of the window or by climbing on filing cabinets. On the other hand, when food was used as a reinforcer, the boys continued to work at the task even though reinforcement was progressively reduced and eventually discontinued altogether. The supposedly short attention span of brain-damaged and retarded children has also been markedly increased by creating favorable incentive conditions (Martin & Powers, 1967). The foregoing studies, and results obtained by other investigators (Slack, 1960; Whitlock & Bushell, 1967; Wolf, Giles, & Hall, 1968) indicate that extrinsic incentives are often essential, particularly during early phases of behavioral change programs.

The incentive question poses greatest problems in the treatment of people who present severe and profound retardation in social development. As previously noted, such individuals are generally unresponsive to verbal stimuli, customary social reinforcers are ineffective in modifying their behavior, and the selected activities often lack acquired reward value for them. In such cases, change agents are forced to rely initially upon primary reinforcers, usually in the form of food. In order to enhance treatment effects, conditioning sessions are typically conducted prior to, or during, mealtimes when food rewards are most effective in sustaining a high level of responding (Lovaas, Berberich, Perloff, & Schaeffer, 1966).

Although food rewards may be effectively employed for short periods, they cannot be relied upon exclusively in change programs. Food

preferences often vary considerably among individuals and even within the same person from time to time. More important, however, the incentive value of food is highly dependent upon the level of food deprivation at any given moment; consequently, food rapidly loses its reinforcing power through satiation. Since change programs require frequent, and sometimes lengthy, sessions, it is necessary to make use of reinforcing events possessing more enduring incentive value.

For individuals who present gross deficiencies in conditioned reinforcers, and who are therefore responsive only to primitive physical consequences, an important initial objective of treatment is to endow social and symbolic stimuli with reinforcing properties. The development of social reinforcers is particularly critical, since human behavior is frequently strengthened, sustained, and modified by praise, approval,

encouragement, positive attention, and affection.

Ordinarily a neutral stimulus acquires reinforcing properties through repeated association with primary reinforcement (Kelleher & Gollub, 1962; Zimmerman, 1957). In their work with autistic children, Lovaas and his associates (Lovaas, Freitag, Kinder, Rubenstein, Schaeffer, & Simmons, 1966) found that negatively reinforcing properties could readily be conditioned to the verbal stimulus “no” through association with aversive stimulation. On the other hand, numerous sessions in which the word “good” was contiguously paired with food failed to endow the social stimulus with any reward value. The contrasting results were attributed to differential attentiveness on the part of the children. They were highly attentive to external cues during negative stimulation, whereas in sessions employing rewards they engaged in considerable

self-stimulatory behavior and appeared oblivious to the relevant social stimuli. It was therefore decided to employ an instrumental conditioning paradigm in which the children received food rewards only if they approached the therapist whenever he said the word “good.” The children were thus required to attend closely to the appropriate verbal cue and to discriminate it from other stimuli occurring at the same time. After the social stimulus had been established as discriminative for primary reinforcement, the children’s approach responses were intermittently rewarded on a gradually increasing ratio in order to further enhance the rewarding capacity of the verbal cue. This procedure proved highly effective. In later phases of the experiment, new responses could be established and maintained in autistic children through contingent presentation of verbal approval alone. Moreover, the social

stimulus retained its reinforcing potency over an extended period on the basis of periodic association with food rewards.

With less severely autistic children social reinforcers were established more readily. In these cases verbal approval and affection in the form of demonstrative pats and hugs sustained the children's positive responsiveness during numerous sessions devoted to language learning and the acquisition of social skills. Occasionally, however, food rewards accompanied the social reinforcers as a means of preserving their efficacy. Many of the change programs discussed later rely heavily upon interpersonal reinforcers in which desired behavior is responded to with attention, interest, and approval while undesired activities are either consistently ignored or socially disapproved.

A stimulus that has been associated on numerous occasions with many types of primary as well as secondary reinforcements acquires the capacity to function as a generalized reinforcer. In the treatment of young children or adults for whom positive social and verbal stimuli have weak incentive value, tangible generalized reinforcers are frequently employed. Appropriate performances are rewarded with monetary credits, tokens, or points that can later be used to obtain a variety of rewarding objects and special privileges. A token incentive system has several advantages over other forms of material rewards: The reinforcing value of tokens is relatively independent of momentary deprivational states; tokens are not subject to satiation effects and therefore retain their incentive properties over long periods; they can be easily presented, if necessary, immediately upon appropriate



performance; and finally, since individuals can exchange their token savings for a variety of attractive items of their own choosing, motivation and responsiveness are likely to remain at a consistently high level.

In recent years extensive use has been made of Premack's (1965) differential probability principle in selecting reinforcing events. Because certain preferred activities can reinforce activities of lesser value, countless events may be effectively employed to initiate and maintain desired behavior. In practical applications of this principle (Homme, 1966), a person essentially agrees to perform a certain amount of low probability behavior to engage in a more preferred activity for a specified time. Apart from its flexibility and simplicity, this type of reinforcement system permits one to utilize naturally occurring activities as reinforcers simply by arranging them in

appropriate temporal contingencies. Rewarding activities are frequently used in combination with generalized reinforcers. In such applications individuals earn tokens for performing desired behaviors which can later be used to obtain, among other things, access to preferred activities.

The preceding discussion has emphasized the influential role of extrinsic reinforcement with persons who, for one reason or another, display intrinsic motivation insufficient to develop the behavioral repertoires necessary for coping effectively with customary environmental demands. It should be emphasized at this point, however, that in a thoughtfully planned treatment program, as newly established patterns of behavior acquire secondary reinforcing properties extrinsic incentives should be gradually withdrawn and replaced with more symbolic and self-monitored reinforcement systems. This issue,

which bears on questions of the durability of induced changes and the humanistic implications of different forms of behavioral influence, will be discussed at length in a subsequent section of this chapter.

### *ARRANGEMENT OF CONTINGENCIES*

After appropriate reinforcers that have sufficient incentive value to maintain stable responsiveness have been chosen, the contingencies between specific performances and reinforcing stimuli must be arranged. Parents, teachers, and psychotherapists intuitively employ rewards in their attempts to influence and modify behavior, but their efforts often produce limited results because the methods are used improperly, inconsistently, or inefficiently. In many instances considerable rewards are bestowed, but they are not made conditional upon the behavior that

change agents wish to promote; long delays often intervene between the occurrence of the desired behavior and its intended consequences; special privileges, activities, and rewards are generally furnished according to fixed time schedules rather than performance requirements; and, in many cases, positive reinforcers are inadvertently made contingent upon the wrong types of behavior.

Most residential treatment programs, for example, are conducted on a contingent-punishment, noncontingent-reward basis. That is, the participants obtain the maximum rewarding benefits with few strings attached, but these rewards and privileges are promptly withdrawn whenever the residents are uncooperative, defiant, or disruptive. In one residential treatment center for delinquent boys that the writer had occasion to visit, children are given 20 points upon their arrival, which initially ensures them access

to all of the rewarding resources that the institution has to offer. However, the boys are penalized by loss of points and accompanying privileges for deviant behavior and infractions of house rules. Within an institutional setting in which noncontingent rewards are provided at a high level, the staff members are cast in the unenviable role of punitive agents, and the boys can move only in a downward direction. Thus, the threat of punishment is ever present, but the positive incentives for behavioral change, though abundantly available, are poorly managed. Under these circumstances, the majority of the participants comply halfheartedly with the minimum demands of the institution in order to avoid penalties for any breach of the rules. Similarly, in most psychiatric facilities, patients can best maximize their rewards by merely adopting a passive patient role.

The necessity for arranging appropriate reinforcement contingencies is dramatically illustrated by studies in which rewards are shifted from a response-contingent to a time-contingent basis (Lovaas, Berberich, Perloff, & Schaeffer, 1966; Baer, Peterson, & Sherman, 1967). During sessions in which rewards are made conditional upon occurrence of the desired behavior, the appropriate response patterns are exhibited at a consistently high level; by contrast, under conditions where the same rewards are given but after a certain time has elapsed, independent of the client's behavior, there is a marked drop in the desired behavior. Reinstatement of response-contingent reinforcement promptly restores the high level of responsiveness. These behavioral changes are particularly striking considering that interpersonal relationship factors and the amount of reward remain the same in all phases of

treatment except for the arrangement of the contingencies. Essentially similar reductions in responsiveness are obtained when individuals are provided rewards in advance without any performance requirements (Ayllon & Azrin, 1965; Bandura & Perloff, 1967).

In an effective program of change reinforcement contingencies should be arranged to provide positive guidance and support for new modes of behavior, rather than to extract minimal compliance with situational demands. Social change programs would become considerably more efficacious, especially in modifying pervasively aberrant disorders, if initially the environment were devised to provide noncontingent rewards at an adequate but relatively low level, and preferred reinforcers were readily available contingent upon the occurrence of desired response patterns. Under

these conditions, a rehabilitative program can be managed primarily on a positive reinforcement basis without resort to those punitive measures that are commonly employed in residential treatments.

Behavior is influenced not only by the contingencies operative in the situation, but also by temporal aspects of reinforcement. Findings from experimental studies (Renner, 1964) demonstrate that behavioral changes proceed most effectively when reinforcement is made immediately contingent upon the behavior one wishes to foster; generally, the degree of control exercised by reinforcement decreases with increasing delay. Whenever a delay occurs between a particular response and its intended consequences, other behaviors appear during the intervening period and that response occurring most closely to the delayed outcome is



immediately reinforced. Since one typically has little control over the responses that may arise during a specific temporal interval, delayed reinforcement may actually strengthen forms of behavior that change agents have no intention whatsoever of promoting.

It is widely assumed, on the basis of results from laboratory studies of delayed reinforcement, that the effects of rewarding consequences will be diminished, or even obviated, unless they are made instantly contingent upon desired performances. This conclusion needs qualification because it is based on evidence from experimentation either with infrahuman subjects or under conditions where the basis for reinforcement is not explained. When the contingencies imposed upon an organism are not clearly specified in advance, interposing a delay between the occurrence of a response and its

consequences increases the difficulty of identifying the arbitrary relationship, particularly if a series of responses is performed during the intervening period. As a result, inappropriate responses tend to be adventitiously reinforced. Although relevant experimental evidence is lacking, there is every reason to expect from informal observation that, in the case of humans, symbolic activities can effectively mediate a delayed reinforcement contingency without any appreciable loss of behavioral control. Therefore, if contingencies are explicitly defined for an individual he is able to link eventual consequences with particular performances. Verbal mediation will, in all probability, eliminate irrelevant responses even though a considerable time may elapse between performance of the requisite behavior and its consequences. A person who is paid on a piecework basis, for example, is likely to

maintain a high performance level, although he receives his total payment at the end of the month rather than in small amounts immediately after each unit of work has been completed.

With young children, grossly deviant adults whose behavior is under weak stimulus control, and individuals whose efforts extinguish rapidly under delayed reinforcement contingencies, it may be necessary initially to employ immediate concrete rewards; otherwise, such persons are likely to display rapid decrements in responsiveness if reinforcing consequences are postponed. On the other hand, persons who are responsive to instructional control are usually able to function adequately under delayed reinforcement provided the contingencies are explicitly defined and the incentives are sufficiently attractive. Moreover, immediate satisfactions derived from the activity itself and

signs of progress often supplement, and may eventually replace, ultimate extrinsic reinforcements in maintaining behavior.

### *RESPONSE INDUCTION AND EVOCATION*

Selection of powerful incentives and skillful contingency management will, in itself, be of little consequence unless methods are available for producing the responses to be reinforced. If the behavior that a change agent wishes to strengthen is already present and occurs with some frequency, then contingent application of incentives can, from the outset, increase and maintain the desired response patterns at a high level. Most cases referred for treatment, however, present behavioral deficits, and therefore complex modes of behavior must be organized in incremental steps, each of which can be easily acquired. When the initial level of the desired

behavior is extremely low, if the criterion for reinforcement is initially set too high, most, if not all, of the person's responses go unrewarded, so that his efforts are gradually extinguished and his motivation diminished. Consequently, in the beginning stages a low criterion for reinforcement is generally adopted so that responses that are within the individual's capabilities, but may have only slight resemblance to the desired behavior, are reinforced. After gross approximations to the complex pattern of behavior become more frequent, reinforcement is made contingent upon a closer response variant. The criterion for reinforcement is thus raised in small successive steps in the direction of more complicated forms of behavior until eventually only the desired behavior is reinforced.

The effective utilization of successive approximation procedures is illustrated in a study

by King, Armitage, & Tilton (1960) designed to increase interpersonal responsiveness in severely withdrawn schizophrenics. Working on the assumption that motor responses could be more easily elicited from these patients than verbal or social behavior, the therapists first set them the task of performing a simple motor response which brought social and material rewards. In successive phases, the complexity of the task was increased, and verbal and interpersonal responses were elicited and rewarded. Also, in later phases, rewards were presented only when the patients communicated verbally and cooperated with the therapist and other patients in order to solve problems of some complexity. Three other groups of patients, matched with the reinforcement group for severity of disorder and length of hospitalization, concurrently participated in either traditional interview therapy, recreational

therapy, or received no treatment. The reinforcement approach proved more efficacious than all other three techniques in producing favorable changes in social behavior assessed in terms of ward observation and standardized interviews. After 15 weeks of therapy, patients treated by the reinforcement method displayed more verbal behavior, less resistance to therapy, more interest in occupational activities, and were better prepared for transfer to a more advanced ward, than patients in the other three groups. Bensberg and his colleagues (Bensberg, 1965; Bensberg, Colwell, & Cassel, 1965) provide additional illustrations of how substantial behavioral changes can be achieved even with profoundly retarded children by rewarding small increments in performance until the more complex skills are established.

It is widely assumed among proponents of

operant conditioning that the above procedure, which is variously labeled *successive approximation*, *shaping*, or *response differentiation*, is ideally suited for developing new, organized modes of response previously absent from the behavioral repertoire of the organism. Consequently, many therapists spend countless hours patiently shaping behavior bit by bit when much of this tedious process can be drastically reduced. As demonstrated in the preceding chapter, complex patterns of behavior can be developed in humans most rapidly through *graduated modeling* combined with positive reinforcement for matching responses. Operant conditioning through successive approximation may, however, be exclusively employed with considerable success to reinstate previously acquired responses that have been extinguished and to strengthen performances weakly



established as a result of inadequate incentive conditions. Thus, by selecting powerful reinforcers and arranging the requisite contingencies, a therapist can induce a mute catatonic who possesses a language repertoire to resume verbal communication (Isaac, Thomas, & Goldiamond, 1960); schizophrenics who have developed adequate work repertoires can be led to participate again in vocational activities (Ayllon & Azrin, 1965); delinquents who refuse to attend to school assignments can be motivated to improve their academic performances (Cohen, 1968); and, in verbal conditioning experiments, college students who command an abundant supply of personal pronouns can be subtly prompted to emit these verbal responses at a relatively high rate (Krasner, 1958).

In addition to utilizing the method of successive approximation and behavioral

modeling for producing complex responses, one can rely upon *verbal prompts* that specifically instruct individuals how and when to perform the reinforceable behavior (Baer & Wolf, 1967). However, in cases that are unresponsive to social forms of response guidance it may be necessary to employ nonsocial stimuli that exercise strong control over the behavior in question, even though the eventual aim is to have the behavior occur in response to quite different stimulus conditions. In using nonsocial *cueing procedures* one initially introduces discriminative stimuli that exert strong control over the desired behavior. After the responses have been evoked and firmly established, the arbitrary stimulus supports are “faded” or gradually withdrawn as control is transferred to stimuli likely to function as the major elicitors under naturalistic conditions. Thus, for example, in augmenting attending behavior in

severely retarded children who were totally unresponsive, Bensberg (1965) initially flashed lights on a wall while he simultaneously instructed them to look, and rewarded them for gazing at the light. In this way attending responses, which are prerequisite for social learning, were increased and eventually brought under verbal stimulus control. The use of tasks graduated in difficulty also includes instances in which stimulus conditions are arranged so that rewardable behavior can be readily elicited at each successive step.

A final method for evoking desired behavior, which is sometimes employed with persons who prove unresponsive to extensive stimulus prompts, involves *physical response guidance*, wherein individuals are assisted physically in making the correct responses. In teaching autistic children grammatical relationships between

objects (Lovaas, 1966), for example, if a child fails to execute the response corresponding to the verbal instruction, "Put the block inside the box," the therapist moves the child's hand with the block to the box and rewards the passively performed action. On subsequent trials the amount of manual guidance is gradually reduced until the behavior is performed without assistance.

### **Ethical Implications of Reinforcement Practices**

The deliberate use of positive reinforcement, particularly in the form of tangible rewards, often gives rise to ethical objections and concerns about harmful effects that may result from such practices. The attitude most commonly expressed is that desirable behavior should be intrinsically satisfying. It is feared that, if persons are frequently rewarded, they will be disinclined to

behave appropriately unless continually paid to do so, and when the customary rewards are discontinued they will cease responding altogether. It is further assumed that rewarding practices not only establish weak and unenduring behavior, but that contingent reinforcement is likely to interfere with the development of spontaneity, creativity, intrinsic motivational systems, and other highly valued self-determining personality characteristics. Some of the more intemperate criticism considers the deliberate use of reinforcement to be deceptive, manipulative, and an insult to the personal integrity of human beings.

For reasons presented above most persons whose own behavior is strongly influenced by social recognition, praise, approval, special privileges, and monetary incentives are quick to disclaim the use of rewarding practices (Bandura

& Walters, 1959; Sears, Maccoby, & Levin, 1957) and to deny that their behavior has been externally regulated (Rogers, 1960). It should also be noted that, paradoxically, one is apt to encounter less concern over the use of aversive methods of control by threat, coercion, and deprivation of privileges, methods which often do produce the negative behavioral outcomes inappropriately attributed to procedures relying upon positive incentives.

The fact that behavior is strongly influenced by its consequences is not a phenomenon created by behavioral scientists, any more than physicists are responsible for the laws of gravity. The process of natural selection has favored organisms with adaptive feedback control systems in which reinforcing consequences serve as a major regulator of behavior. Indeed, if behavior did not change as a function of its outcomes, one's life

span would be drastically curtailed. Selection of the types of incentives by which the behavior of others is to be established, guided, and maintained is, of course, an ethical issue. However, the behavioral effects resulting from applications of different psychological procedures are entirely an empirical matter. Available evidence from laboratory and psychotherapeutic studies suggests that reinforcement procedures, if thoughtfully and skillfully implemented, can produce enduring changes in social behavior and facilitate the acquisition of self-monitoring reinforcement systems. If, on the other hand, operant techniques are crudely applied, and the incentives are inappropriate to individuals' developmental levels, then the change program may be insulting as well as ineffective.

In discussing the systematic utilization of positive incentives it is important to recognize

that a change program represents a continuum of psychological experiences in which the type, amount, and source of reinforcement regulating behavior are gradually modified. Hence, the incentives employed initially to establish new patterns of social behavior and to develop symbolic reinforcers may differ considerably from the stimulus events that ultimately assume controlling and reinforcing functions.

Critics of reinforcement methods generally create the impression that change agents work with mature and intrinsically motivated persons, but, rather than appealing to higher symbolic motivations, insist on imposing crass materialistic incentives upon them. There are undoubtedly some practitioners who apply incentive procedures thoughtlessly and ineffectively. Ordinarily, however, primary rewards are employed in initial stages with persons who are



not reinforceable with other types of events and who would otherwise remain inaccessible to treatment. In the latter cases it would be no more appropriate to rely upon developmentally advanced incentives than to teach young children how to count by commencing with the principles of advanced mathematics. After reinforcing functions have been imparted to social and symbolic stimulus events, then more subtle and naturally occurring reinforcers are increasingly employed. Without the initial concrete training, psychologically incapacitated persons are relegated to a subhuman existence in custodial institutions.

#### *REINFORCEMENT SYSTEMS AND DURABILITY OF BEHAVIORAL CHANGES*

Demonstrations that behavior can be maintained at a satisfactory level through reinforcements mediated by change agents are of

limited significance unless the response patterns endure long after the specially created contingencies have been discontinued. There are several ways in which reinforcement systems can be devised and altered during the course of treatment to ensure that existing behavior does not readily extinguish.

*Change in Frequency or Magnitude of Reinforcement.* After response patterns have been firmly established through continuous reinforcement, the schedule is gradually thinned out, by providing rewards on increasingly variable ratios and intervals so that the rewarding consequences occur only periodically. As shown in the introductory chapter, intermittently reinforced behavior is extremely resistant to extinction. The durability of behavior under less favorable reinforcement conditions can also be increased by gradually reducing the amount of reward after the

behavior has been sufficiently strengthened, or by increasing the amount of work per reinforcement (Staats & Butterfield, 1965).

*Change in the Locus of Reinforcement.* In most instances many different interpersonal and material rewards are potentially available, but they remain inaccessible to individuals who lack the social and vocational skills to attain them. In a similar manner, because of behavioral deficits or inhibitory tendencies persons may refrain from participating in activities that would provide rich sources of enjoyment. If proficiency in the necessary skills and social responses were established, they could be adequately supported by reinforcements regularly available within the environment. The main purpose of specially arranged reinforcement is to develop and to sustain behavioral repertoires to the point where the individual makes successful contact with

existing sources of positive reinforcement. Once this is achieved, the arbitrary contingencies can be completely withdrawn without weakening or reducing social behavior.

An excellent example of the successful shift of the locus of reinforcement from adult change agents to peer group members is provided in the treatment of an extremely withdrawn girl, referred to in Chapter 6 (Allen, Hart, Buell, Harris, & Wolf, 1964). After a brief period in which teachers' interest and attention were made contingent upon interaction with peers, the girl entered into a great deal of social play with other children. However, when adult reinforcement for peer interactions was temporarily removed during the early phase of treatment, she reverted to her isolate pattern of behavior; reinstatement of the therapeutic contingency restored social play to its previous high level. As the girl derived increasing

enjoyment from play activities with peers, adult rewards for interaction with children were progressively diminished to a normal amount of attention, and the schedule for nonreinforcement of adult contacts gradually relaxed. Eventually the treatment program was discontinued altogether and no special contingencies were arranged thereafter. The increase in social interaction with other children nevertheless endured, as revealed in observations of behavior conducted at various times following the termination of the program. Other case studies, specifically designed to investigate the durability of behavioral change (Baer & Wolf, 1967), have shown that if adults maintain their reinforcement support of social behavior in children until they achieve reciprocally rewarding interactions with peers, the children's behavior comes increasingly under peer control and is little affected by withdrawal of

adult social reinforcement.

Results from the above studies, and others conducted in the same manner, show that established patterns of behavior maintain their strength after specially arranged consequences are discontinued provided the behavior is brought under the influence of favorable contingencies within the individual's social milieu. In cases, however, where the reinforcement practices in naturalistic situations are either deficient or grossly deviant it is doubtful that lasting behavioral changes can be achieved, unless the program is extended to encompass significant members of the individual's social environment.

*Change in the Form of Reinforcement.* In previous discussions of the treatment of autistic children it was shown how their behavior could initially be modified only through the use of

immediate primary reinforcers which were gradually reduced and eventually discontinued as social stimuli acquired reinforcing functions. Another illustration of the transformation of reinforcing supports for behavior during the course of treatment is provided by Wahler (1968) who successfully modified extreme oppositional behavior in children by altering their parents' reinforcement practices. An initial program in which parents ignored their children's resistance to requests and rewarded cooperative behavior with approval proved relatively ineffective. A subsequent reinforcement system combining parental approval with tokens exchangeable for prized toys produced dramatic and enduring increases in cooperativeness. Thereafter, the tokens were gradually eliminated and cooperative behavior was stably maintained by social approval alone.

In order to acquire proficiency in complex behaviors people must engage in long hours of arduous work, give up attractive competing activities, and delay a host of immediate gratifications that may be readily available. Because the learning process involves some degree of self-denial and other negative aspects, many people fail to develop minimal competencies even though threats and coercive pressures are continuously brought to bear. This prevalent problem can be rectified more satisfactorily and humanely by applying an arbitrary reward contingency until the behavior is developed to the stage at which it produces natural reinforcing consequences. Thus, for example, extrinsic rewards may be employed temporarily to teach children how to read, but after written subject matter becomes sufficiently reinforcing in itself to sustain further development of reading skills, the



artificial contingency may be withdrawn. Many forms of behavior, such as communicative facility and manipulatory skills, which permit an individual to regulate his environment more effectively, persist with little external support because they are functional in producing rewarding outcomes. New performances are also partially sustained by the sensory feedback that they naturally produce.

If rewards are recurrently and explicitly associated with cues that signify competency or correctness, then symbolic stimulus events that have informative value, and qualitative differences in performance, acquire secondary reinforcing properties. At this higher developmental level, cues designating the adequacy of one's performance may be as effective a reinforcer as monetary incentives (Lewis, Wall, & Aronfreed, 1963; Miller & Estes, 1961). Once informative

response feedback becomes a source of personal satisfaction, maintenance of behavior is less dependent upon extrinsic social or material incentives. It should be noted, however, that any reinforcement ensuing from confirmation of the correctness of one's responses is probably mediated through a self-reinforcement process rather than automatically generated. It is exceedingly unlikely, for example, that correctness feedback on tasks that are personally devalued or are regarded as elementary will have much, if any, reinforcing value. On the other hand, confirmation of attainments that exceed personal standards of what constitutes a worthy performance will tend to activate positive self-evaluations.

The highest level of autonomy is achieved when behavior generates self-evaluative and other self-reinforcing consequences. In such instances, a person sets himself explicit standards of

achievement and creates either self-rewarding or self-punishing consequences depending upon the quality of his behavior relative to his self-imposed standards. Self-evaluative reactions can not only maintain behavior under conditions of minimal external support, but they may override the influence of social rewards for behavior that conflicts with the person's own norms of acceptable conduct. The manner in which modeling and reinforcement procedures can be used to establish intrinsic performance standards by which a person monitors his own behavior has been previously discussed.

Established patterns of behavior are most likely to endure across a bewildering variety of reinforcement contingencies if the significant reinforcing events are either intrinsically related to the behavior, or self-administered. The conditions necessary for developing complex

behavioral repertoires through reinforcement methods have been explicitly defined and are usually faithfully implemented. Procedures for developing reinforcement functions to symbolic events need to be further refined and applied systematically in programs of behavioral change. Judging by evidence from laboratory studies, the types of self-regulatory mechanisms that humanistically oriented commentators consider to be antithetical to behavioral approaches are, in fact, most readily developed by methods derived from social-learning theory.

It is also often erroneously assumed that change programs based upon principles of reinforcement involve a simple mechanistic technology that can be applied almost reflexively by anyone who possesses sufficient perseverance. On the contrary, successful implementation of social-learning methods calls for considerable

ingenuity and sensitive responsiveness to psychological changes in individuals throughout the period of treatment. Among other requirements, one must devise efficacious incentive systems, select appropriate reinforcement schedules, arrange essential contingencies and gradually modify them as treatment progresses. One must also create methods for evoking desired responses with sufficient frequency for them to be strongly established. And finally, it is necessary to select and to train appropriate persons to implement the procedures in naturalistic contexts. Whereas in conventional treatments people are frequently left to their own devices in transferring whatever they may have learned to their everyday life, social-learning approaches devote considerable attention to arranging conditions necessary to ensure optimal generalization and maintenance of newly

established modes of behavior. In view of the amount of inventiveness required, it is not surprising that, although principles of reinforcement have been in existence for many decades, the derivation of efficacious procedures has been disappointingly slow. For similar reasons, the implementation of contingency systems by amateur or less artful operant practitioners is often appallingly crude.

#### *SPECIFICATION OF REINFORCEMENT CONTINGENCIES*

In most experimental investigations of reinforcement processes, instructions that specify the desired behavior and its programmed consequences are deliberately minimized or ignored altogether. Indeed, Skinner (1963) has strongly cautioned against the use of instructional control procedures in learning experiments on the grounds that they circumvent and obscure the

functional analysis of behavior. Laboratory experimentation designed to explore the extent to which behavioral phenomena can be brought under the control of different types of reinforcement conditions should, of course, avoid combining variables in ways such that their individual contributions cannot be distinguished. However, rigid adherence to isolated procedures is ill-advised in change programs which must frequently combine a variety of methods in order to achieve optimal results. Some devoted partisans of the operant approach, nevertheless, often rely exclusively upon reinforcement practices to develop response patterns that can be readily produced by the use of simple instructions, behavioral demonstrations, or appropriate verbal modeling cues.

Considerable experimental evidence, which will be reviewed in a later chapter, demonstrates

that awareness of response-reinforcement contingencies can markedly accelerate behavioral change. It is also abundantly evident, as any parent will attest, that advice, instructions, requests, and other verbal forms of guidance often have no enduring effects or go unheeded. Systematic studies conducted with children (O'Leary, 1968) and adolescents (Phillips, 1968) indeed show that prescribing behavioral rules alone is relatively ineffective in changing their behavior. The power of verbal influence is largely determined by the anticipated or accompanying response consequences. This is revealed in a study by Ayllon and Azrin (1964) designed to evaluate the relative efficacy of instructions and reinforcement, used singly and in combination, for reinstating acceptable dining behavior in adult schizophrenics.

The treatment program attempted to get



patients to pick up cutlery at the serving center, which they rarely did; instead they ate their food with their hands. Following the baseline period of observation during which no special consequences were arranged, a reinforcement procedure was introduced in which patients who picked up the necessary utensils were immediately given, without any explanation, their choice of extra food or cigarettes. In a subsequent phase, instructions were added to the reinforcement procedures, by having the attendants explain, "Please pick up your knife, fork, and spoon, and you have a choice of extra milk, coffee, cigarettes, or candy."

As shown in Figure 4-1, reinforcement alone produced no change whatsoever in the patients' behavior. Here the reinforcement procedure proved totally ineffective because the vast majority of patients never exhibited any responses that could be reinforced, and the few who

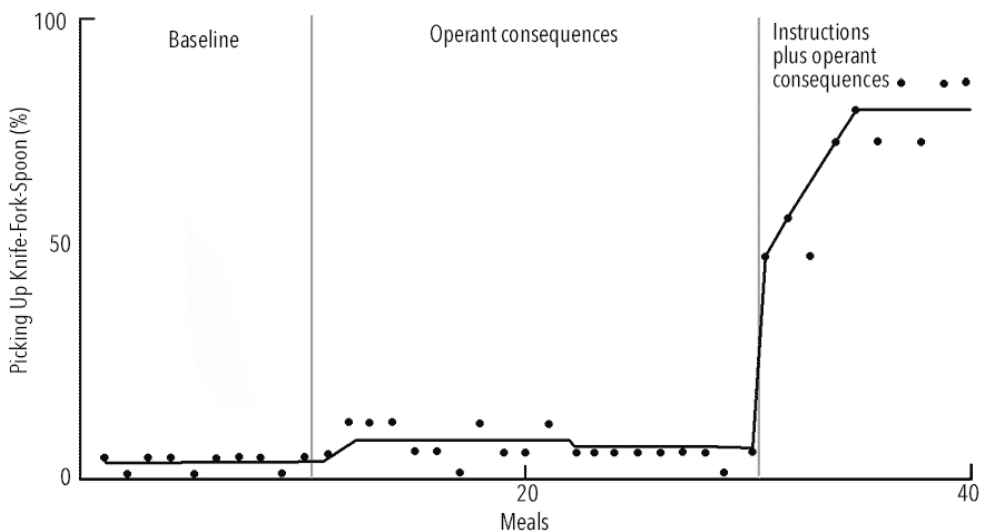


Figure 4-1. Percentage of patients who picked up cutlery during the baseline period, during the reinforcement phase in which appropriate responses were promptly rewarded, and during a period when instructions were combined with reinforcement. Ayllon & Azrin, 1964.

occasionally picked up cutlery never figured out the basis upon which they were given extra treats. By contrast, when instructions were combined with reinforcing consequences the patients showed a marked and sudden increase in appropriate behavior, and a number of them maintained this change after the contingent rewards were discontinued.

In order to assess the efficacy of instructions alone, a second group of patients was simply asked to pick up the necessary eating utensils at each mealtime. Instructions were found to be initially effective for about half of the patients, but in the absence of any consequences for following or ignoring the requests, verbal directives eventually lost most of their controlling power (Figure 4-2). During the next phase, the instructions were continued but, in addition, patients gained immediate access to the food

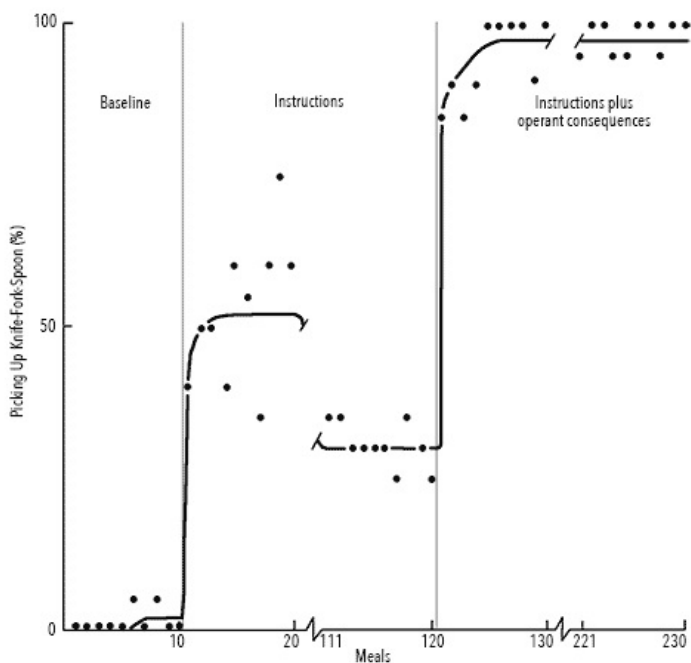


Figure 4-2. Percentage of patients who displayed the appropriate responses during baseline, instruction, and combined reinforcement-instruction phases of the study. Ayllon & Azrin, 1964.

counter whenever they picked up the cutlery and were sent to the end of the serving line if they did not. Under the combined influence of instructions and response consequences virtually every patient regularly exhibited the appropriate dining behavior. Comparison of the two sets of data reveals that delayed access to rewards produced by nonresponsiveness was considerably more powerful in modifying the patients' behavior than extra treats for performance of appropriate responses.

## **Applications of Contingency Systems**

The extensive growth of programs utilizing positive incentives in one form or another precludes a complete review of the countless clinical, remedial, and developmental applications of reinforcement principles. Rather, some representative contributions that illustrate the

procedures and their efficacy in modifying a wide range of behaviors will be discussed. Since investigations of reinforcement variables alone are most often conducted by researchers working within the Skinnerian conceptual framework, the degree of success of these methods is rarely evaluated through the use of control groups to measure the contribution of uncontrolled variables, or comparisons between groups involving different experimental operations. Instead, the intrasubject replication design is generally employed for isolating the variables governing change. In this method of research a given pattern of behavior is repeatedly induced and eliminated in the same subject through successive reversal of treatment conditions (Sidman, 1960). Intrasubject replication is the most convincing means of demonstrating the functional relationship between behavioral

phenomena and their controlling conditions. However, there are certain limitations and evaluative problems in the use of this methodology.

Intrasubject replication is well-suited for investigating performance control processes but it cannot be employed in studying learning phenomena in which certain experiences produce a more or less irreversible change in the behavior of an organism. For example, after persons have acquired communicative speech, reading skills, and various social and psychomotor competencies, one cannot erase these response capabilities and thus restore the original behavioral deficits through nonreinforcement operations or any other psychological procedure.

A number of interpretive complications arise in the use of this methodology even in the study of

performance changes. There are no difficulties in evaluating findings when large successive changes in behavior occur rapidly and consistently across different subjects. In many instances, however, not only are the accompanying behavioral changes less dramatic, but some individuals remain essentially unaffected by repeated exposure to the same treatment conditions. Replicative failures are usually attributed to inadequacies in the reinforcers employed, whereas successes are assumed to result from the manipulated reinforcement variables. It is entirely possible, however, that in successful cases the behavioral changes are largely due to the influence of unobserved variables that happen to co-vary with the reversal of treatment conditions. The evaluative problem is further complicated by the fact that, in cases where successful behavioral control is achieved, no statistical criteria have



been developed to evaluate whether the magnitude of change produced by a given treatment exceeds the variability resulting from uncontrolled factors operating while the treatment condition is not in effect. Many readers have undoubtedly experienced frustration in attempting to evaluate conclusions drawn by investigators on the basis of visual inspection of frequency curves that not only involve considerable variability during baseline conditions, but differ widely between subjects and are somewhat irregular across successive replications.

The intrasubject replication design also precludes accurate assessment of the relative efficacy of different treatment variables. Changes that are sequentially produced in a given individual by the application of diverse methods cannot be directly compared for several reasons.

The degree of influence required to create an initial change may differ from that needed to effect additional improvements in the same behavior. In developing linguistic functions in autistic children, for example, Lovaas (1966) found that children were slow to acquire the first few words but subsequent word learning proceeded at a relatively rapid rate. A similar increase in the rate of response acquisition as treatment progressed was noted by Staats, Minke, Goodwin, & Landeen (1967).

In many instances the original baseline is not recoverable; consequently, the effects that different variables have on behavior must be compared against dissimilar performance levels. Even if the original response baseline can be recovered, it may be much easier to reinstate a given behavior than to create it initially. Zeilberger, Sampen, and Sloane (1968) have, in

fact, shown that behavior can be modified more quickly the second time, a finding that is evident in most graphs based on experiments in which the same controlling variables are successively applied and withdrawn. Not only does prior performance of responses increase the speed with which they can be reinstated after being extinguished, but during the initial experiences learning sets are acquired which can result in marked improvement in performance of quite different responses (Kimble, 1961; Harlow, 1949).

Finally, the reinforcement value of a given event can be markedly altered through contrast with previous or contemporary conditions of reinforcement (Buchwald, 1960; Dunham, 1968). Therefore, sequential changes associated with different types of reinforcement operations reflect relational influences as well as the specific properties of reinforcement procedures. Hence,

the implicit assumptions that repetitive control does not alter the modifiability of the behavior in question, that behavior at different levels is equally modifiable, and that reinforcement operations are unaffected by contrast in incentive conditions are all probably untenable. The relative potency of different controlling variables can, therefore, be best assessed through experimental designs involving matched groups.

Some of the published reports involving reinforcement techniques are based upon individual cases in which, for practical or ethical reasons, successive reversals of contingencies have not been attempted. Although these types of studies provide less convincing evidence regarding the variables responsible for observed changes, the results nevertheless have important suggestive value, particularly when changes are effected in persons who have proved totally

unresponsive to other methods of change.

### *MODIFICATION OF DEVIANT SOCIAL BEHAVIOR*

Differential reinforcement has been widely employed for the modification of deviant behavior in both adults and children. In these treatment programs rewarding consequences for desired behavior are typically combined with extinction, modeling, and in some cases with punishment procedures. However, the studies reported in the present section are primarily concerned with the control of behavior through its positive consequences.

Ayllon and his associates have conducted an extensive program of research in the development of reinforcement procedures for the modification of gross behavior disorders in adult psychotics. In the early studies (Ayllon & Michael, 1959) nurses and hospital attendants were trained to record the

frequency with which patients exhibited specific patterns of behavior, and to arrange in naturalistic situations the reinforcement contingencies—usually in the form of social attention and food rewards— necessary to bring about desired changes. By withholding attention for bizarre forms of behavior while selectively reinforcing rational response patterns, nurses succeeded in markedly reducing or completely eliminating psychotic verbalizations (Ayllon & Haughton, 1964), chronic anorexia (Ayllon, Haughton, & Osmond, 1964), and a host of other deviant behaviors of long standing considered indicative of psychotic pathology (Ayllon, 1963; Ayllon & Michael, 1959). In later studies (Ayllon & Azrin, 1965, 1968) the scope of operant conditioning methods was broadened by the use of a wider range of positive incentives, which were applied on a group basis for establishing social and

vocational competencies in chronic psychiatric patients. A detailed account of the latter program will be presented later.

Numerous projects have been reported in which reinforcement principles are systematically employed to alter deviant behavior in children. These studies provide impressive testimony that children's behavior can be powerfully controlled by the social consequences provided by adults. Each case involves intrasubject replication in which the incidence of particular response patterns is objectively recorded under naturally occurring contingencies and during subsequent periods when therapeutic contingencies are alternately applied and withdrawn. The findings demonstrate that persistent problem behaviors can be successfully eliminated, reinstated, and extinguished a second time by altering the amount of adult interest and attention produced by the

deviant behavior. Among the disorders successfully treated through such selective reinforcement are extreme withdrawal (Allen, et al, 1964; Brawley, Harris, Allen, Fleming, & Peterson, 1969; Johnston, Kelley, Buell, Harris & Wolf, 1963), regressive crawling (Harris, Johnston, Kelley, & Wolf, 1964), extreme passivity (Johnston, Kelley, Harris, & Wolf, 1966), hyperactivity and aggressive behavior (Allen, Henke, Harris, Baer, & Reynolds, 1967; Hall, Lund & Jackson 1968), and depressive feelings and marked overdependency (Wahler & Pollio, 1968).

A noteworthy feature common to the procedures discussed above, apart from their demonstrated efficacy, is the fact that the change programs are conducted within natural settings by teachers and parents utilizing reinforcing events that form a natural part of spontaneous interpersonal relationships. It is possible, of



course, to modify behavior under contrived conditions with incentives that are highly attractive but are rarely employed, for practical or other reasons, in everyday situations. Although results of such studies may have some value in demonstrating that a particular form of behavior can be controlled by artificially arranged consequences, such treatment procedures eventually have to be supplanted for several reasons: First, behavioral changes established under artificial conditions must be supplemented with generalization training, with respect to both the types of tasks and incentives employed, in order to ensure adequate transfer effects. Even if contrived procedures were equally effective, they frequently necessitate specialized equipment and personnel, which limit their applicability. Furthermore, although relevant data are rarely obtained, one must also take into account possible

self-evaluative consequences that arbitrary interventions have upon their recipients, as well as social effects upon the attitudes and behavior of others who have opportunities to observe the treatment.

Countless studies employing reinforcement techniques have been published in recent years, but they lack the replicative control feature. Nevertheless, they report favorable outcomes with such diverse clinical problems as autistic behavior (Lovaas, 1968) severe anorexia (Bachrach, Erwin, & Mohr, 1965; Leitenberg, Agras, & Thomson, 1968), school phobias (Patterson, 1965), socially disruptive behavior (Zimmerman & Zimmerman, 1962), mutism (Sherman, 1965; Straughan, 1968), psychogenic seizures (Gardner, 1967), self-mutilative activities (Allen & Harris, 1966), antisocial behavior (Colman & Baker, 1968), and innumerable other types of deviant behavior,

some of which are discussed in sections that follow. Although one finds a paucity of experiments in which the relative efficacy of diverse methods of therapy is systematically evaluated, results of several controlled investigations with schizophrenic patients (King, Armitage, & Tilton, 1960; Peters & Jenkins, 1954; Schaefer & Martin, 1966) and antisocial character disorders (Colman & Baker, 1968), disclose that treatment based upon reinforcement principles produces greater change in interpersonal behavior than do programs following conventional lines.

In a significant extension of reinforcement procedures, Patterson and his colleagues (Patterson, Ray, & Shaw, 1968) have achieved some success in modifying deviant behavior by altering the reinforcement patterns of familial systems and peer groups. According to the authors' etiological formulation, deviant behavior

typically arises under conditions of low levels of positive reinforcement and nonreciprocal social interactions among family members. The children are, therefore, forced to resort to extreme forms of behavior to elicit reinforcing reactions from others. As a further consequence of nonreciprocity, children are likely to become increasingly controlled by the peer group and less responsive to adults. This change, in turn, leads adults to resort to aversive forms of control, which further reduces their influence as reinforcing agents.

The treatment approach, which involves a four-step program, takes place in the home. After two weeks of baseline observation of familial interactions, parents are provided with a specially prepared booklet designed to familiarize them with general principles of reinforcement, extinction, aversive control, inadvertent

reinforcement of deviant behavior, and with procedures for recording interpersonal behavior. In the second phase, parents are asked to list the child behaviors they wish to modify. They are then assigned a special hour during each day to record the incidence of these behaviors, the various consequences they engender, and the family members who provide the consequences. After they have learned to observe interpersonal contingencies accurately, parents are helped, through ample demonstration and supervised practice, to alter the reinforcement contingencies that they provide for both deviant and desired response patterns. The family problems are thus modified one at a time.

When necessary, new reinforcement practices are also introduced in the classroom setting and in the peer group. Control over deviant behavior in extra-familial situations is typically achieved by a

peer contingency procedure in which both the child and his peers initially earn desired rewards for his good behavior. The material reinforcers are then gradually withdrawn until eventually the child's behavior is entirely maintained by social reinforcement from teachers and peers. Following termination of the formal treatment program, telephone contact is maintained on a diminishing schedule, and home observations are conducted periodically over a six-month follow-up period.

Results based on six families that have participated in the above program show that parents reduced the frequency with which they positively reinforced deviant behavior from an average rate of 35 percent during the baseline period to 10 percent at the end of the intervention program. Modification of familial contingencies not only decreased the family's output of deviant behavior, but it increased the amount of positive

social reinforcement in the entire social system, and it produced a more reciprocal quality to the interactions between the various family members. Moreover, these favorable changes tend to be effectively maintained over time. Although this approach appears to hold promise, the marked variability in baseline rates of deviant behavior before the new reinforcement practices were inaugurated, and the differential responsiveness of families to the program, indicate that further refinements and assessments are needed.

*DEVELOPMENT OF SOCIAL AND SELF-  
MANAGEMENT SKILLS IN SEVERELY RETARDED  
CHILDREN*

Reinforcement techniques have also proved to be of value for establishing basic social and self-care skills in profoundly retarded children who, because of their primitive level of behavior, are usually considered uneducable and are hence

relegated to institutional back wards. Such children have been toilet-trained (Giles & Wolf, 1966; Hundziak, Mowrer, & Watson, 1965), taught to dress and undress themselves, to feed themselves with utensils, to manage their personal grooming, and to respond to verbal directions, which is of considerable aid in the social training process (Bensberg, Colwell, & Cassel, 1965; Girardeau & Spradlin, 1964; Minge & Ball, 1967; Roos, 1965). In addition, the efficacy of these methods for developing communication skills, interpersonal response patterns, and other complex forms of behavior in severe retardates is being explored. Bensberg notes parenthetically that such programs have not only benefited retarded children, but the functions of attendants, who implement the training procedures, have changed from dismal custodial care to active participation in assisting children to gain



competencies within the limits of their ability.

### *SYMBOLIC LEARNING*

In recent years, reinforcement procedures have been used effectively in conjunction with programmed instructional materials to establish complex symbolic forms of behavior. Staats' (1965) program of research on the acquisition of reading behavior furnishes one such example.

Reading involves complicated processes in which children must learn both to discriminate among intricate verbal symbols and to associate appropriate verbal responses to them. Complexity arises primarily because the same elements in a compound word stimulus must elicit different responses depending upon the context in which they occur. Since words contain many common stimulus properties (e.g., counsel, council) and in most cases, word differentiation relies upon subtle

cues, the development of reading responses constitutes a demanding associative form-discrimination task. In addition to difficulties created by high stimulus similarity, the instructional material itself typically serves as a weak source of positive reinforcement, particularly for young children. An effective reading program therefore requires extensive training utilizing material that is carefully sequenced, repeated pairing of words with their pictorial or verbal associates, immediate and continuous feedback of the correctness of the responses, and an incentive system capable of sustaining children's attention and active responsiveness over long periods. These essential conditions are incorporated in the semi-automated method devised by Staats to study reading acquisition.

In the initial pre-training phase, children are

reinforced for imitating single vowels or words spoken by the experimenter. After verbal modeling has been well established, a word is shown with several drawings of simple objects, one of which corresponds to the printed stimulus, and the experimenter pronounces the word. When children have learned through discriminative consequences to match words with their pictorial representations without verbal prompts, the actual reading training is begun. The reading task is presented to children primarily in the form of a matching-to-sample discrimination procedure. In each learning sequence a sample word is shown in the top aperture of a panel, and is matched by one of three words presented simultaneously in a bottom row of windows. The experimenter names the stimulus word and asks the children to repeat the word and to select the comparable item from among the alternatives. If the child reads the word

correctly, he is immediately reinforced with tokens which may be exchanged for preselected toys or other desired items. Whenever the child's response is incorrect, the entire sequence is repeated. After children have learned to read words individually, they are presented in sentences and in short paragraphs composed of previously learned material.

In a discrimination learning task the error rate can be effectively controlled by the use of cueing procedures and stimulus alternatives that are easily discriminable from the correct choice. By gradually fading out the stimulus supports for the appropriate behavior and employing progressively finer contrasts between the stimulus alternatives (Rocha e Silva & Ferster, 1966), children can eventually learn to respond to subtle features of words. Most other symbolic activities, such as abstraction and concept formation,

similarly depend upon the establishment of subtle discriminations. This can be best achieved by working from relatively gross contrasts to successively smaller differences between stimuli.

Although comparisons with other instructional methods have not been made because of the exploratory nature of this research, nevertheless Staats has accumulated considerable data (Staats, Finley, Minke, & Wolf, 1964; Staats, Minke, Finley, Wolf, & Brooks, 1964) regarding the potential value of this approach for establishing reading behavior in preschool children. Further, the influence of schedules of reinforcement on rate of reading acquisition has been studied systematically in several cases with intrasubject replications. The results, though somewhat variable, demonstrate that under conditions of reinforcement children maintain strong interest in the reading task, and continue to acquire new

reading responses over an extended series of sessions even though, for experimental reasons, the social interaction between tutor and child is severely curtailed. In educational or remedial applications one would, of course, question the wisdom of rigid adherence to such highly impersonal practices and exclusive reliance upon material reinforcers. As might be expected from previous research, intermittent reinforcement generally produced higher reading response rates than continuous reinforcement. Moreover, during periods when reinforcement was temporarily discontinued reading behavior rapidly deteriorated.

These procedures were initially extended by Staats to the study of reading acquisition in retarded children and remedial reading in a delinquent adolescent (Staats & Butterfield, 1965). The latter case involved a 14-year-old boy who, in

addition to accumulating a long and varied history of aggressive destructive behavior, had never received a single passing grade in any school subject; despite eight and a half years of classroom instruction, his reading achievement was only at the second grade level. Because of his uncharitable attitudes and behavior toward school personnel, and occasional dismantling of school property, he was considered to be uneducable, incorrigible, and mentally retarded.

Paralleling the methods employed in the laboratory studies, the boy learned first to read words presented singly, then combined in sentences, and finally organized into short stories. The vocabulary items, which were selected from standard reading material arranged according to difficulty level, were presented individually on index cards and the boy was asked to pronounce them. Following each correct reading response the

boy received token rewards which he saved for various articles and money allotments. After the boy had mastered the vocabulary items he earned additional tokens for accurate oral reading of paragraphs, silent reading of entire stories, and for correct answers to questions assessing comprehension of story content.

During the training program the boy covered a sizable range of reading material with undiminished interest. He not only acquired new reading responses at a relatively high rate, but he showed increasing ability to read new words on first presentation, and retained much of what he had learned. This notable progress was also reflected in reading achievement test scores obtained prior to, during, and after completion of approximately 40 hours of reading training distributed over a four and a half month period (Figure 4-3). That the brief treatment program



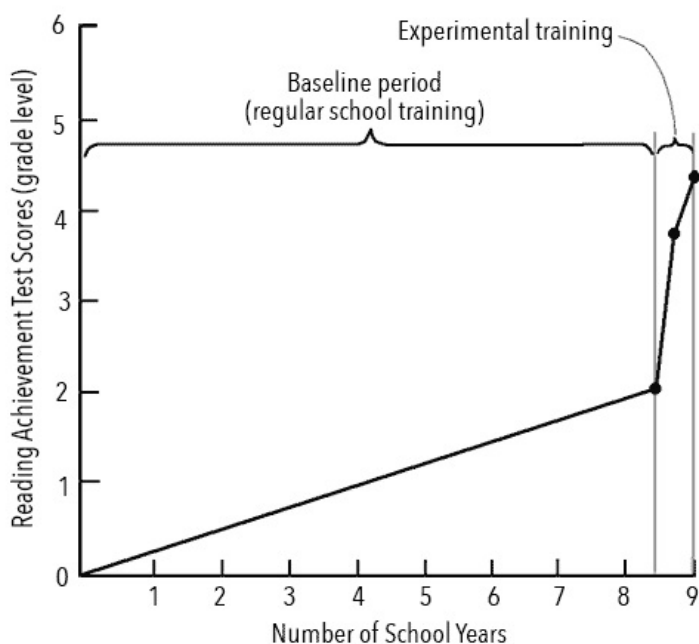


Figure 4-3. Reading test scores achieved after 8½ years of regular classroom instructions and after 4K months during which reading responses were positively reinforced. Staats & Butterfield, 1965.

had produced generalized educational and behavioral effects is indicated by the fact that the boy received undistinguished but passing grades in all subjects for the first time in his turbulent academic career, and he markedly decreased and eventually ceased his aggressively defiant behavior. The entire program, which was administered by a probation officer, involved a total expenditure of \$20.31 for token exchange items.

Essentially the same procedures were applied with some degree of success by adult volunteers and high school seniors in teaching reading skills to retarded, emotionally disturbed, and culturally deprived children (Staats et al., 1967). The children acquired reading responses at an accelerating rate even though the instructional material was increasing in difficulty and the amount of extrinsic reinforcement was

progressively reduced. However, several methodological problems associated with the criterion tasks and the fact that control subjects received special training with similar materials precluded a stringent test of whether a program involving tight contingencies and material reinforcers yields better outcomes than the standard educational practices.

*Self-instructional Systems.* The acquisition of basic cognitive skills and knowledge, prerequisite for higher symbolic activities, requires repeated presentation of substantial amounts of abstract content and principles, as well as intricate discrimination training. Since many of these functions can be performed more efficiently by programmed self-instructional techniques than by conventional training methods, increasing use is made of semi-automated instructional systems for symbolic learning. In evaluating the role of these

approaches in the educational process, it should be emphasized that the critical issue is not reliance upon mechanical versus social presentation of stimulus material, but rather which tutorial systems, applied either singly or in combination, best approximate optimal conditions for learning. Although social commentators often attribute legions of virtues to conventional modes of instruction and hosts of pernicious effects to programmed methods, many instructors do not, in fact, provide the type of content organization that would ensure rapid learning and effective retention; many present material in ways that extinguish students' intellectual interests; and often many inadvertently establish strong avoidance tendencies toward the subject matter being taught. As a consequence, many students, particularly those who are weakly motivated or less well endowed intellectually, display marked

intellectual deficits despite numerous years expended fruitlessly in school attendance.

Provided that they are skillfully designed and adaptive to individual requirements, self-instructional systems possess several features that can facilitate the learning process. First, they present material to the student in a well-organized graduated order. The utilization of logically ordered sequences prevents students from becoming confused or lost through omission of essential intermediate steps in exposition; this removes one major aversive aspect of conventional instruction. Second, they provide the student with immediate feedback about the accuracy of his responses, helping him to continuously monitor his comprehension of the subject matter. Third, since a student can proceed to new information only by making correct responses to preceding items, the required active

participation of the student forces careful observation of stimulus material. Thus, if a student should lapse into classroom reverie, the instructional content, like Old Man River, keeps rolling along, whereas in programmed instruction the patient tutor remains idle as long as the student is disengaged. Fourth, the self-pacing feature of programmed teaching methods makes individualized instruction possible for persons who differ in ability and mastery of the material. In computerized systems, in which new instructional content is selected at each step on the basis of the learner's past performances, students can generate their own optimal learning sequences. Finally, because errors are drastically reduced by gradual progression in content difficulty, learning from self-instructional programs is minimally threatening. The self-pacing and nonthreatening characteristics are

particularly important in clinical and remedial applications to persons who have undergone extensive failure experiences and who differ widely in the content areas in which they show deficits.

In an effort to assuage fears that machines may displace warm-blooded pedagogues, it has been customary to relegate the teaching of hackneyed, factual material to programmed instructional devices, reserving creative, problem-solving, and conceptual skills to teachers who would be liberated from mundane functions. As Resnick (1963) cogently points out, the difficulty in teaching complex intellectual skills results primarily not from inherent limitations in programmed instruction procedures but from the fact that cognitive activities are usually described in very general terms or remain essentially undefined. For this reason, even talented teachers

are often at a loss in deciding what types of learning experiences might be most appropriate to the development of abstract abilities. After component behaviors of more complex skills have been adequately specified there is no reason why they cannot be taught by carefully prepared learning sequences. Indeed, there is some evidence to suggest that self-instructional methods can be utilized effectively for teaching relatively complex intellectual skills such as language functions, mathematical reasoning, decision making, abstract thinking, problem-solving strategies, a wide range of vocational and avocational skills, and the basic concepts and principles of diverse fields of study. Moreover, numerous comparative investigations (Silberman, 1962; Stolurow, 1963) have generally shown programmed instruction to be at least as effective as, and sometimes better than, conventional



teaching methods while also substantially reducing student time, cost, and professional personnel. Since the development of favorable attitudes toward subject matters is as important a part of the learning process as the acquisition of specific intellectual skills (Mager, 1968), the assessment of tutorial systems should measure both attitudes and achievements. Unfortunately, the attitudinal effects of programmed instruction, or conventional teaching for that matter, are rarely taken into account.

With further advances in auto-instruction, both technologically (in the areas of picture projecting systems, vocal programming, and the use of computers to permit students more complete control over learning sequences), and in knowledge of acquisition processes, it should be possible to arrange optimal learning conditions more readily and to extend programmed

instruction to even more complex forms of symbolic behavior. Indeed, in an elaborate study of computer-assisted instruction conducted by Atkinson and Suppes (Atkinson, 1968) first grade students receive their entire reading and mathematics instruction through television learning units controlled by a central process computer. The computer presents the material, monitors the students' performances, and continuously adjusts the learning sequence to the capabilities and individual rate of achievement of each pupil. Instruction provided by this system produces greater proficiency than does the regular classroom method of teaching. If costs can be reduced, computer-based systems of education may eventually replace conventional techniques of instruction in many areas of study. Such instructional systems could, in fact, furnish varied forms of educational material at different levels

under optimal learning conditions to homes, schools, commercial facilities, and any other settings equipped with television learning units.

Progress in this area has been hampered to some extent by the identification of programmed learning with audio-visual aids. As a consequence, research activities have been unduly preoccupied with comparisons of conventional instructions and minor variations of program characteristics, rather than undertaking systematic investigations of acquisition processes associated with self-instructional systems. The latter type of research would not only increase the effectiveness of programmed instruction, but would also elucidate fundamental learning processes involved in complex skills. For example, the teaching of reading through an automated matching-to-sample method, applied to young children over an extended period of time, should provide basic

information about discriminative processes to supplement knowledge derived from brief laboratory studies employing identical procedures with less meaningful content.

Although ample attention is currently being devoted to hardware and program variables, the incentive requirements for learning have been essentially ignored. This oversight results in large part from widespread assumptions that the programmed format is effective in holding attention and that informative feedback about the accuracy of one's responses functions as an automatic positive reinforcer in sustaining responsiveness. This may be true for persons who have learned to value intellectual achievements, or who expect to derive some immediate benefit from increasing their competency in specific areas of functioning. However, for highly motivated bright students, small step, linear programming

involving strongly prompted responses, which ensures successful learning in less talented individuals, may provide such trivial increments in performance that the learning task becomes neither challenging nor personally rewarding. While these negative effects can be avoided to some extent by adjusting the size of informational units to ability level, the incentive problem grows far more serious in the case of persons for whom signs of intellectual achievement must be established as effective rewards. In these instances an extrinsic incentive system must be added to self- instructional procedures if students' interest and responsiveness are to be durably maintained.

### *SELF-MANAGED BEHAVIORAL CHANGE*

Most of the programs that have been discussed so far achieve behavioral changes primarily

through external management of reinforcement contingencies. Recent years have witnessed a growing interest in self-control processes in which individuals regulate their own behavior by arranging appropriate contingencies for themselves. These self-directed endeavors comprise a variety of strategies, some of which were originally proposed by Ferster, Nurnberger & Levitt (1962).

Efforts at self-influence usually prove unsuccessful because they involve vague self-instructions that have no immediate behavioral implications. Moreover, unless self-directives are supported by reinforcement operations, either external or self-administered, they are unlikely to exert much control over behavior. The *selection of well-defined objectives*, both intermediate and ultimate, is an essential aspect of any self-directed program of change. The goals that individuals

choose for themselves must be specified in sufficiently detailed behavioral terms to provide adequate guidance for the actions that must be taken daily to attain desired outcomes.

To further increase goal commitment participants are asked to make *contractual agreements* to practice self-controlling behaviors in their daily activities. Thus, for example, in modifying smoking behavior (Tooley & Pratt, 1967) and obesity (Ferster, Nurnberger, & Levitt, 1962), clients agree to restrict increasingly, in graduated steps, the times and places in which they will engage in the undesired behavior. Under conditions where individuals voluntarily commit themselves to given courses of action, subsequent tendencies to deviate are likely to be counteracted by negative self-evaluations. Through this mechanism, and anticipated social reactions of others, contractual commitments reinforce

adherence to corrective practices.

Satisfactions derived from evident changes help to sustain successful endeavors. Individuals can, therefore, utilize *objective records of behavioral changes* as an additional source of reinforcement for their self-controlling behavior. In studies of self-directive processes by Kolb, Winter, & Berlew (1968) students used miniature counters to keep an accurate record of the frequency with which they displayed desired and undesired behavior throughout each day. These data were plotted graphically to provide a clear picture of the behavioral improvements students were accomplishing by their own efforts. Daily feedback of this type not only serves a reinforcing function but it also safeguards against irregular and halfhearted implementation of self-prescribed procedures. In a study designed to improve self-instruction behavior, Fox (1966) found that



students who recorded their daily productivity continued to work on assignments until they exceeded their preceding performances, thus ensuring continued improvement.

Since behavior is extensively under external stimulus control, persons can regulate the frequency with which they engage in certain activities by *altering stimulus conditions* under which the behavior customarily occurs. Overeating, for example, will arise more often when appetizing foods are prominently displayed in frequented places in the household than if they are stored out of sight and made less accessible. Indeed, it has been shown that, compared to individuals of normal weight, obese persons are less responsive to internal hunger states (Stunkard & Koch, 1964), whereas their eating behavior is excessively dependent upon external food-related stimuli (Schachter, 1967). Some

degree of self-control can thus be achieved by judicious environmental arrangements that reduce the external determinants of the behavior. Conversely, the incidence of desired activities can be increased by introducing appropriate stimuli for them.

Behavior that provides immediate positive reinforcement, such as eating, smoking, and drinking, tends to be performed in diverse situations and at varied times. Therefore, another important aspect of self-managed change involves progressive *narrowing of stimulus control* over behavior. Continuing with the obesity illustration, individuals are encouraged gradually to delimit the circumstances under which they eat until eventually their eating behavior is brought under the control of a specific set of stimulus conditions. This outcome is achieved by having clients commit themselves to a graduated program in which they

refrain from eating in non-dining settings, between regular mealtimes, and while engaging in other activities such as watching television, reading, or listening to the radio. An essentially similar procedure is employed to increase effortful behavior that is under weak situational control. Thus in getting students to study productively a specific desk and time are designated for study and all potentially distracting stimuli are removed. To preserve the desk's stimulus value for study behavior, whenever students find their thoughts wandering or their interests lagging they are instructed to leave the situation and turn to other activities. In this way progressively longer periods of concentrated study are achieved (Fox, 1966; Goldiamond, 1965).

The foregoing procedures are primarily aimed at instituting self-controlling behavior, but unless positive consequences are also arranged the well-

intentioned practices are likely to be short-lived. Self-controlling behavior is difficult to sustain because it is associated, at least initially, with relatively unfavorable conditions of reinforcement. Prepotent activities typically provide immediate positive reinforcement for the individual, whereas their aversive consequences are not experienced for some time. Conversely, self-control measures usually produce immediate unpleasant effects while the personal benefits are considerably delayed. *Self-reinforcing operations* are, therefore, employed to provide immediate support for self-controlling behavior until the benefits that eventually accrue take over the reinforcing function.

The contingencies that individuals arrange for themselves may involve different types of reinforcing events. They are asked to select a variety of activities that they find rewarding and

to make them contingent on the performance of desired behavior. Viewing television, drinking coffee, reading magazines, recreational breaks, monetary rewards, or food treats may, for example, be made conditional upon a certain amount of study behavior. As was noted in the introductory chapter, self-managed reinforcement can serve an important behavior maintenance function (Bandura & Perloff, 1967). In the case of powerful appetitive behaviors, positive competing activities may be engaged in, to aid self-control, at times when the instigation to perform undesired behavior is high. The disposition to perform prepotent behavior can also be reduced by generating immediate aversive consequences either symbolically (Cautela, 1966; Homme, 1965), or through the use of portable stimulation devices (McGuire & Vallance, 1964). The manner in which self-generated aversive effects have been utilized

to gain control over sexual perversions, chronic alcoholism, and other types of addictive behavior receives detailed consideration in Chapter 8.

As a final feature of self-directed change programs, increases in desired behavior and reductions in undesired behavior are attempted gradually. In this way the incidence of experienced discomforts is kept low, and steady progress toward the eventual goal can be achieved.

The efficacy of self-directed approaches to behavioral change is best illustrated in the modification of obesity, which has proved refractory to a variety of medical and psychological procedures. Stunkard (1958) succinctly describes the usual outcomes associated with traditional treatments as follows: "Most obese persons will not stay in treatment for obesity. Of those who stay in treatment, most will

not lose weight and of those who lose weight, most will regain it [p. 79].” Unlike approaches that focus on caloric intake or inferential inner causes of overeating, self- control programs attempt to accomplish an enduring change in the pattern of eating behavior by regulating stimulus conditions and self-generated consequences for the behavior. Stuart (1967) reports uniformly marked and lasting weight reductions in eight obese women who followed a program combining the various elements discussed above (Figure 4-4). In a controlled study Harris (1969) found that men and women who were trained to use similar self-control procedures lost weight and maintained the loss, whereas a matched control group given calorie charts and urged to reduce remained obese. Both studies further reveal that this approach is accompanied by low dropout rates and no unpleasant emotional effects. The

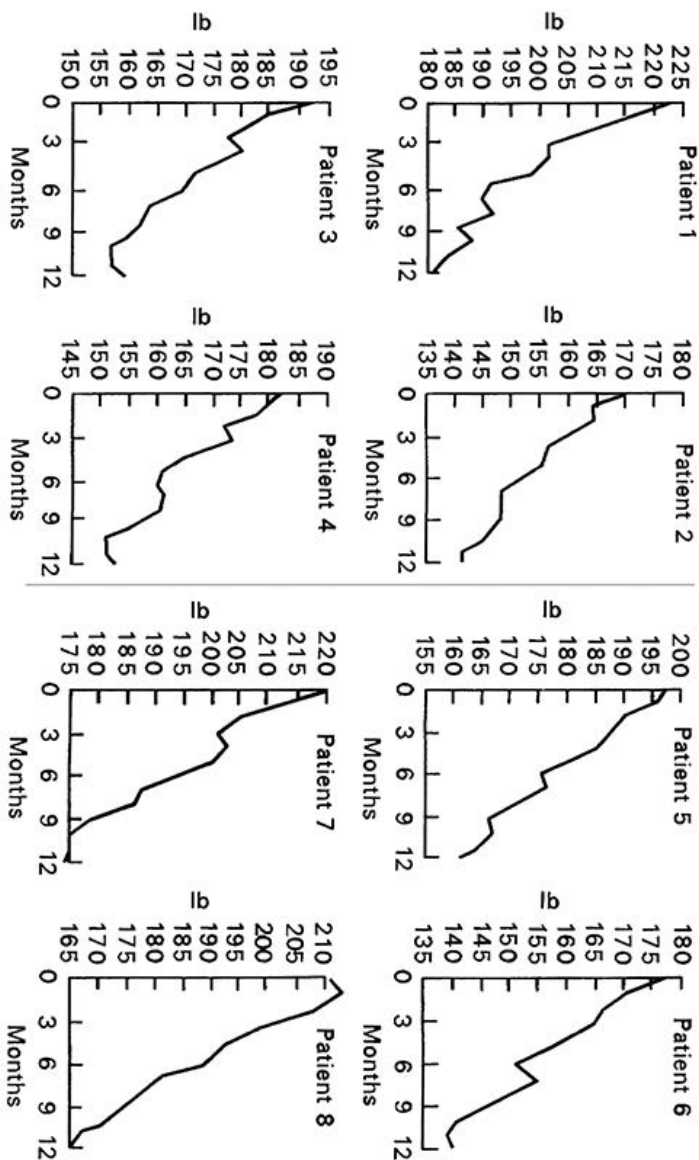


Figure 4-4. Weight losses achieved by eight women using self-control procedures. Stuart, 1967.



encouraging preliminary findings indicate that self- control methods merit further systematic investigations both as treatments in their own right and as adjuncts to other procedures.

### *VERBAL CONDITIONING*

The method of positive reinforcement has also been widely applied in studies of verbal conditioning. These investigations typically utilize either a free-interview or discrimination-learning situation in which an experimenter selectively reinforces certain classes of verbal responses but ignores all other verbalizations. The reinforcement usually consists of nodding, smiling, repeating or paraphrasing the interviewee's remarks, or simple verbal utterances with positive connotations. The simplicity of the procedure and its similarity to clinical interviews led to ready adoption of verbal-conditioning paradigms for testing hypotheses

concerning psychotherapeutic interaction processes. The overall results of innumerable studies (Kanfer, 1968; Krasner, 1962; Salzinger, 1959) reveal that interviewers can exercise substantial control over the content of subjects' verbal behavior through selective responding. It has been demonstrated, for example, that affective expressions, positive or negative self-reference statements, confiding, hostile, and affiliative verbalizations, expressions of opinion or beliefs, "hallucinatory" and "neurotic" responses, maternal references, early childhood memories, and common responses to word association stimuli can be increased by minimal social reinforcement, and decreased by withholding reactions conveying interest or approval. Experiments designed to isolate variables governing the extent of verbal conditioning have shown that subjects' responsiveness to social reinforcers is affected by

such factors as the characteristics of the experimenter, the types of reinforcing events employed, the content of responses selected for modification, subjects' interpretations of the reinforcing stimuli, the personality characteristics and emotional state of interviewees, and the quality of the relationship between the experimenter and his subjects.

The theoretical and practical significance of experiments demonstrating that verbal content is modifiable through reinforcement largely depends upon the psychological events that one wishes to explain or to modify. If one is interested in elucidating the communication processes associated with conversational forms of treatment, then verbal conditioning procedures furnish a laboratory analogue to the clinical interview, provided that the situation bears some resemblance to psychotherapy, the interviewer's

reinforcing interventions are analogous to those regularly employed by therapists, and the classes of responses chosen for study exemplify psychotherapists' treatment concerns. In this connection, verbal-conditioning studies strongly indicate that the specific content of clients' verbalizations, which is often assumed to reflect intrapsychic processes, may be largely determined by interviewers' selective interest and attention. This is corroborated by analyses of response-reinforcement contingencies as they occur naturally in psychotherapeutic interactions (Bandura, Lipsher, & Miller, 1960; Goldman, 1961; Murray, 1956; Truax, 1966; Winder, Ahmad, Bandura, & Rau, 1962). Therapists' positive reinforcement of certain types of verbal responses increases their occurrence, whereas clients avoid discussing matters that produce less favorable reactions. Considering that people often remain in

treatment for extended periods, and that the therapist's potency as a reinforcing agent is enhanced by his high status and his client's emotional dependence upon him, it is not surprising to find that clients frequently undergo marked changes in verbal behavior.

People rarely enter psychotherapy and willingly expend considerable time, money, and effort merely to learn to talk differently. A question of the utility of verbal conditioning as a method of treatment therefore arises. Little therapeutic importance can be attached to verbal-conditioning procedures unless it is demonstrated that verbal behaviors established in treatment settings generalize to other persons in the natural environment and, even more important, that verbal changes influence nonverbal behaviors to a significant extent. Several investigators have found that changes in verbal responses display

some transfer to different situations (Ullmann, Krasner, & Collins, 1961) and can affect nonverbal responding (Lovaas, 1961, 1964); however, most studies have failed to obtain generalization as measured by tasks varying in similarity (Rogers, 1960; Tobias, 1960; Ullmann, Krasner, & Edinger, 1964; Williams, 1959).

The contradictory and weak generalization effects noted above are not at all surprising when one considers that experimental manipulations in most conditioning studies barely suffice to produce a conditioning effect, let alone stimulus or response generalization. It is possible that greater changes could be achieved through verbal conditioning if interviewers continued the treatment for longer periods and instituted systematic programs of generalization training. Generality is usually ensured by varying stimulus configurations. This requires changing reinforcing

agents and modifying treatment conditions so that both the social settings and the responses being reinforced are increasingly similar to those encountered in the natural environment. As noted previously, therapists often choose to modify verbal behavior in hospital or office settings rather than to alter social behavior directly under natural conditions, more for reasons of convenience than therapeutic efficacy. It would be far more meaningful and advantageous to effect desired behavioral changes from the outset and to provide clients with graduated performance tasks to carry out in their social milieux. Such an approach avoids the unnecessary problems associated with circuitous treatment strategies that commence with verbal conditioning, which must later be supplemented by a series of procedures designed to establish and to transfer social response patterns to extra-therapeutic situations. There are

occasions, of course, when change agents are faced with the problem of reinstating verbal communication in mute persons (Isaac, Thomas, & Goldiamond, 1960; Salzinger, Feldman, Cowan, & Salzinger, 1965; Sherman, 1965) or of modifying delusional and other types of deviant verbalizations (Ayllon & Haughton, 1964; Ayllon & Michael, 1959; Richard & Dinoff, 1962). Verbal conditioning may be an appropriate, though not necessarily the most efficient, procedure for these purposes.

In addition to the use of verbal conditioning as a method for gaining understanding of interview processes and as a treatment technique in its own right, this approach has been employed to study the influence of certain variables on learning processes. Initial findings from verbal conditioning experiments were accepted as striking demonstrations of automatic, unconscious



learning. However, more detailed analyses of conditioning performances as a function of subjects' awareness of reinforcement contingencies raised fundamental questions about what, in fact, is being learned in such experiments (i.e., verbal responses or hypotheses about contingencies). With conceptualization of verbal conditioning as a hypothesis-testing rather than an automatic response-strengthening process, the focus of research interest shifted from traditional learning variables to the role of awareness in the learning process. Results of this line of research and their implications for theories of behavioral change will be reviewed later.

### **Social Organizational Applications of Reinforcement Contingencies**

The discussion thus far has been primarily concerned with the alteration of circumscribed responses of single individuals through positive

reinforcement. In many cases change agents are faced with the far more complex task of effecting extensive modification in the attitudes and behavior of large groups of individuals in educational, rehabilitative, and other social establishments. In order to accomplish widespread behavioral changes it is necessary to alter institutionally organized practices of the larger social system in ways that will simultaneously affect the behavior of each member in beneficial ways. Some of the issues and problems associated with group-oriented contingency systems are best illustrated in treatment applications of reinforcement procedures to institutionalized populations.

Over the years there have appeared numerous sociological studies of the psychiatric hospital as a social system (Dunham & Weinberg, 1960; Goffman, 1961; Stanton & Schwartz, 1954;

Wessen, 1964), each of which documents the debilitating effects that prevailing institutional practices have upon inmate populations. Because of the large numbers of patients who must be cared for with limited staff resources and facilities, most institutions, regardless of their avowed objectives, are primarily concerned with the management and social control of patients, rather than with, their rehabilitation. In order to maintain efficiency and economy, the institution must effect certain changes in patients' behavior that are incompatible with achievement of effective social functioning and often prove more deleterious than the behavioral problems that originally led to the patients' hospitalization.

The initial socialization of inmates usually involves some degree of suppression of individualized modes of behavior. On admission to the institution, people are characteristically

deprived of most of their personal possessions, their civil rights, their social status, their accustomed satisfactions, their privacy, and their individuality, so that they can be handled expeditiously in large groups. Throughout the period of institutionalization, the patients' behavior is closely regulated and accommodated to fixed hospital routines. Under these types of organizational contingencies, initiative, self-reliance, and self-determination, which are necessary for attaining satisfactory independent adjustment outside the hospital, are generally extinguished, whereas the more docile patient-role behaviors bring about the greatest rewards and promotion in graded ward systems. Moreover, whatever chores the patients may be assigned contribute primarily to hospital maintenance rather than to the further development of occupational skills. With prolonged withdrawal of

the customary incentives for sustaining complex behavioral repertoires, patients generally display a progressive loss of social and vocational competence, which renders them even less capable of managing their lives on the outside.

In addition to reinforcement of institutional dependence and behavioral losses through deficient incentives, the gradual abandonment of patients by their relatives, their stigmatization as mentally diseased, and their loss of contact with persons and contemporary events outside the hospital further contribute to chronicity. Most patients who are subjected to traditional contingency patterns in psychiatric facilities over a period of several years become permanently resigned either to a simple regimented institutional life or to a pattern of "intermittent patienthood" (Friedman, von Mering, & Hinko, 1966). Although, in exchange for self-

determination, hospital residency provides more physical comforts and fewer taxing demands than patients with limited personal resources can attain within their own social environments, it is evident that they are rarely overjoyed or contented with their sheltered existence. Major changes in reinforcement contingency patterns at the social system level are therefore required if institutional establishments are to serve an important rehabilitative function.

The recent years have witnessed increasing use of contingent reinforcement on a group basis. These procedures have been systematically applied, for example, to hospital wards for severely debilitated psychotics (Atthowe & Krasner, 1968; Ayllon & Azrin, 1965) and alcoholics (Narrol, 1967), in social-educational programs for retarded children (Bijou, 1965; Girardeau & Spradlin, 1964), in remedial academic

programs for school dropouts and low achievers (Clark, Lackowicz, & Wolf, 1968; Wolf, Giles, & Hall, 1968), in educational systems for managing behavior disorders (O'Leary & Becker, 1967) and fostering productive classroom behavior (Hall, Panyan, Rabon & Broden, 1968), and in rehabilitative institutions for delinquent adolescents (Cohen, 1968). Unlike traditional treatment systems, these programs contain work-payment incentive systems and contingency structures that are highly compatible with those in the larger society.

There are three main characteristics of group-oriented reinforcement practices as they are being applied to populations that require, at least initially, the use of extrinsic incentives. First, behaviors essential for effective day-to-day functioning (e.g., self-management, educational accomplishments, appropriate social behavior,

satisfactory work performance, etc.) are designated by the staff as reinforceable responses. Second, a simulated currency, which is exchangeable for a variety of desired objects, activities, and special privileges, can be earned by performance of the appropriate behaviors. Third, an exchange system is devised in which a specified number of points or tokens is required for the purchase of various objects and privileges, similar to monetary transactions in the outside community.

The powerful control exercised by group reinforcement procedures over the behavior of an entire psychiatric ward population is best exemplified by a series of experiments (Ayllon & Azrin, 1965) in which organizational reinforcement contingencies were systematically varied. In each of the studies, tokens earned could be used to secure, among other things, privacy



(e.g., choice of bedroom, choice of eating group, selection of personal furniture and a room divider), freedom to leave the ward and hospital grounds, private audience with members of the hospital staff, recreational opportunities (e.g., movies, band concerts, social functions, exclusive rental of a radio or a television set), and a varied array of commissary articles that could be obtained by special request.

One experiment, conducted with a small group of chronic female patients, studied the influence of reinforcement contingencies on patients' performance of off-ward jobs that were staffed by paid hospital personnel. In the initial phase each patient selected her preferred work assignment and received 70 tokens for each full 6-hour day. In order to ascertain whether job selection was indeed determined by extrinsic incentives or by social and intrinsic rewards deriving from the

vocational activity itself, in the second phase of the study patients were no longer paid for participating in their preferred jobs, but tokens could be earned by work in non-preferred assignments. During the third phase, the original reinforcement for the preferred job was reinstated.

In marked contrast with the usually erratic and lethargic work performance of patients prior to the incentive program, under the simulated economy system all patients reported promptly and regularly to work without complaint, even though they were free to take time off from their jobs whenever they wished. That the contingency structure was highly influential in regulating the behavior of the group is further shown by the fact that all but one of the patients changed their work assignments immediately when reinforcement was shifted from preferred to non-preferred jobs

(Figure 4-5). When informed that the people with whom they had been working were very pleased with their performance and would like them to continue, but in order to give other patients a turn at the job, no tokens would be available, several patients explained to ward attendants: “No, honey, I cannot work at the laundry for nothing. I’ll work at the lab. I just couldn’t make it to pay my rent, if I didn’t get paid.” ...“You mean if I work at the lab I won’t get paid? I need tokens to buy cigarettes for my boy friend and to buy new clothes so I’ll look nice like the other girls [pp. 363-365].”

In a subsequent experiment, when patients were paid the tokens on a noncontingent basis each morning rather than at completion of the day’s assignment, they all ceased working within a week. On the other hand, when reinforcement was again made conditional upon work performance, the patients immediately resumed their job

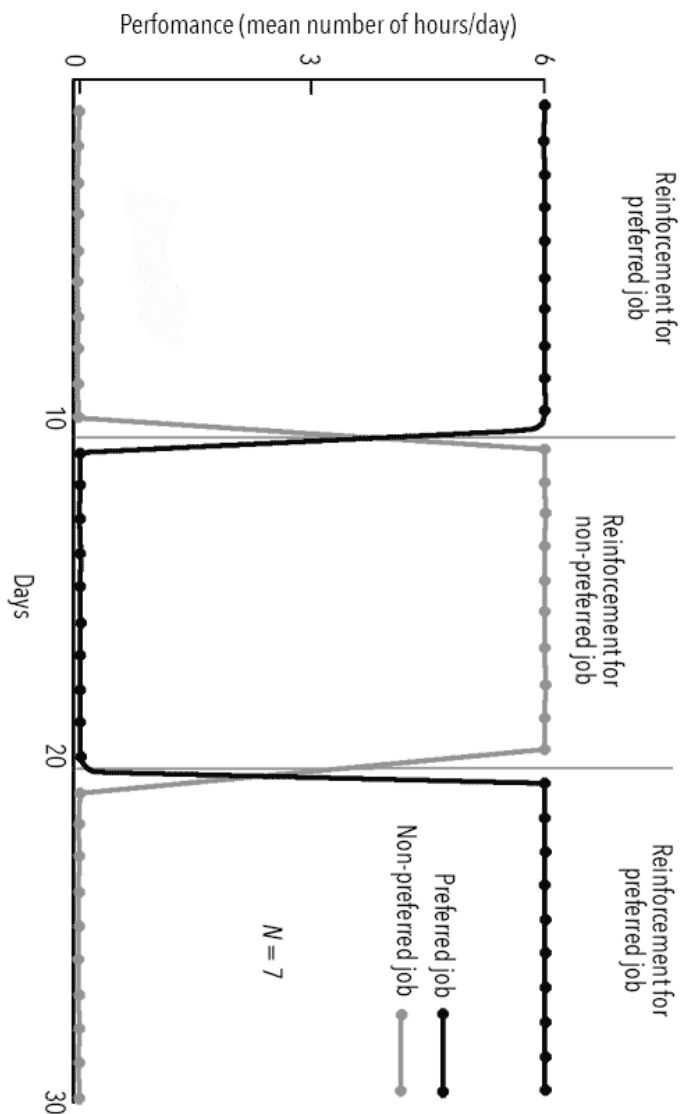


Figure 4-5. Mean number of hours patients worked per day when positive reinforcement was varied between preferred and nonpreferred jobs. Ayllon & Azrin, 1965.

assignments. These marked changes in performance are particularly interesting in view of patients' reports that they worked to keep active, because of enjoyable social relationships, personal satisfactions deriving from the work itself, and other intrinsic gratifications. Obviously in this case self-reports were unreliable indicants of the actual conditions maintaining their behavior.

The manner in which patients spent their currency is also highly informative. It was used mainly to secure privacy (45%), commissary items (34%), and ward leaves (21%), whereas virtually no tokens were expended for private audiences with hospital staff (.001%), for religious services (.0002%), or recreational activities (.0008%).

The contingency system was found to be equally effective in maintaining active patient participation in varied on-ward activities

including complex duties as dietitians, secretarial assistants, waitresses, and sales clerks in the commissary, in janitorial, ward cleaning, and laundry work, assisting in recreational programs and personal care of other patients, and special services. As shown in Figure 4-6, when rewards were dependent upon successful completion of performances the patients worked industriously; when they were simply given the tokens noncontingently they gradually stopped working; and when contingent reinforcement procedures were reinstated their participation was restored immediately and maintained at the previously high level.

It is of particular interest that when the incentives were completely withdrawn and the institutional rewards and privileges were made freely available in a manner similar to usual hospital practices, a marked loss in behavior

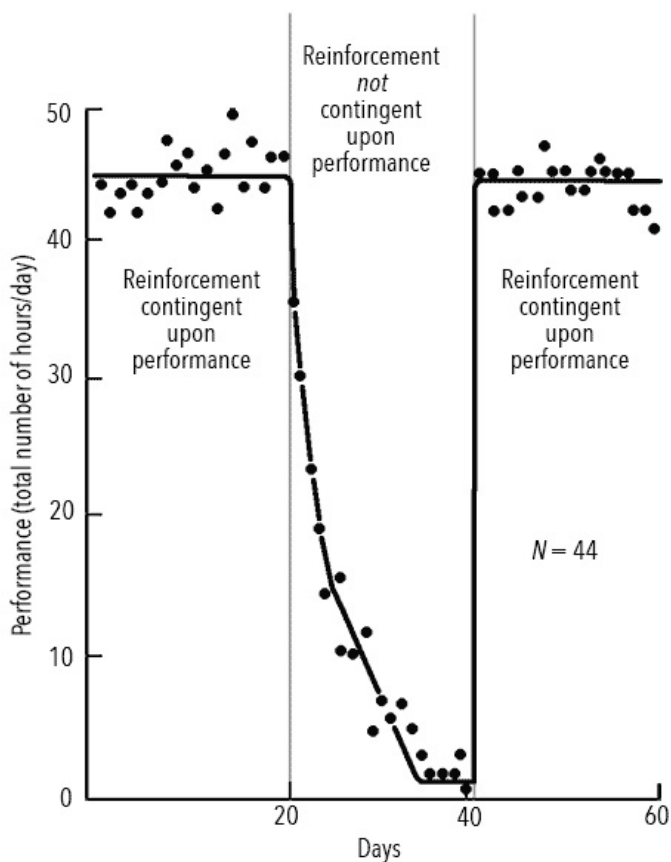


Figure 4-6. Total number of hours a group of 44 schizophrenic patients participated in rehabilitative activities when rewards were conditional upon successful completion of assignments and when the same rewards were provided regardless of whether or not the patients took part in the activities. Ayllon & Azrin, 1965.

resulted (Figure 4-7).

The rapid behavioral changes produced by alternating incentive conditions does not necessarily demonstrate that reinforcement is the sole controlling factor. In social situations behavior always remains partly under modeling stimulus control. Persons who occupy a prestigious position in a social group usually serve as major sources of social behavior for other members. Consequently, to the extent that the incentive conditions modified the behavior of prestigious models, other patients may have emulated their actions independently of the token rewards. As Schwartz & Hawkins (1965) have shown, substantially different group behavior can occur under the same reinforcement conditions depending upon the behavior of influential models. The ubiquitous influence of modeling cues complicates interpretation of intragroup



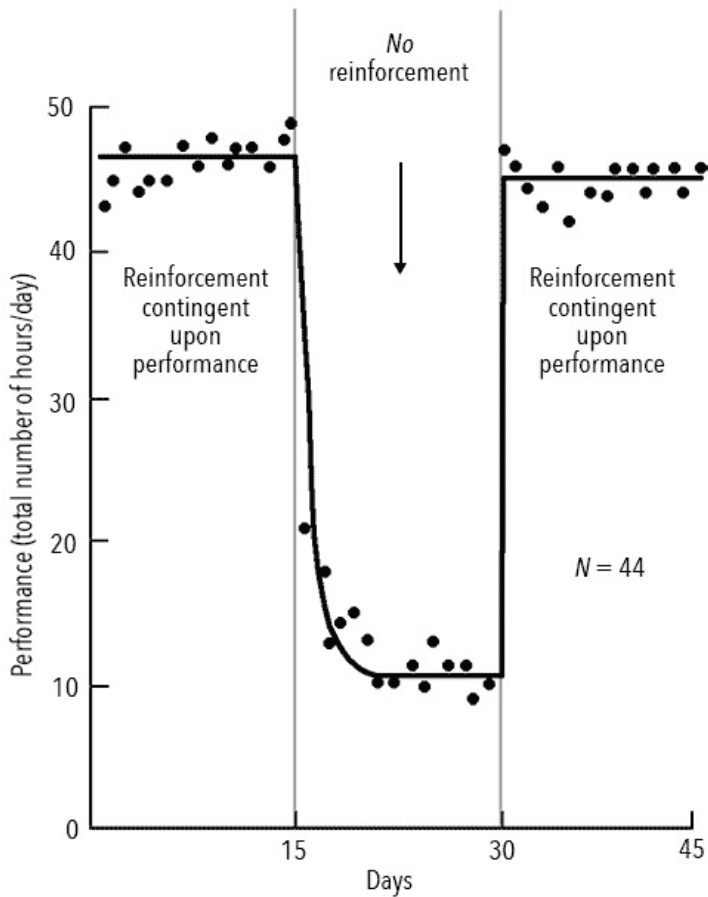


Figure 4-7. Total number of hours spent each day by the group of 44 patients performing “on-ward” activities during periods when rewards were given upon completion of work assignments, when positive incentives were not used and the various activities and privileges were freely available, and when the reinforcement contingencies were reintroduced into the social system. Ayllon & Azrin, 1965.

replicative control through manipulation of reinforcement variables. An additional complication was unfortunately introduced in several of the studies by designating the noncontingent period as a “vacation with pay,” which carries a strong suggestion that work might be temporarily discontinued. The changes observed were, therefore, probably a compound function of incentive conditions, modeling influences, and instructional sets.

The successive reversals of work performances consistently achieved through systematic variation of contingency structures provide convincing experimental demonstrations that organizational reinforcement practices can determine the degree to which persons will exhibit initiative, involvement, and active participation in available activities. These principles and procedures have been applied on

an extended basis with deliberate therapeutic intent in various institutional settings.

Atthowe & Krasner (1968) established an incentive program in an entire psychiatric ward population of 86 chronic schizophrenic patients, whose length of hospitalization varied from 4 to 49 years with a median institutional residency of 24 years. As a group, these patients had maintained an apathetic, isolated, and almost vegetative existence on the ward. They participated minimally in the hospital routines, and they often neglected to care for themselves or to change their clothes unless aided by attendants. Most had lost complete contact with the outside community and were essentially resigned to a permanent institutional residency.

In an effort to reinstate interpersonal and self-directing behavior so that the patients could

function more effectively, a token system involving most phases of ward and hospital life was adopted. The patients were informed that, in the future, certain privileges, recreational activities, passes, money allowances, and numerous other rewarding events could be purchased with tokens. The patients were provided with many opportunities for earning tokens through appropriate social behavior. In addition to self-care, responsibility, and housekeeping behaviors, the patients could earn tokens for participating in various social and vocational activities. Each patient was rewarded immediately after successful completion of some desired activity. A system of negative sanctions and token fines was established to control seriously disruptive behaviors and theft of tokens. The latter problem attested to the fact that the range of behaviors created by the simulated economy was,

indeed, analogous to that occurring in the larger outside community.

Those who functioned more independently and could assume full responsibility for their work assignments were compensated more generously. However, they were paid the tokens only once a week in order to teach them to budget their expenditures. By utilizing banking and budget management systems patients were further prepared for successful community life. Special token bonuses were also offered if patients received satisfactory ratings in their industrial training and made worthy contributions to their social group.

The ward incentive program mirrored societal practices in still another respect. Patients who were able to function productively on their jobs, who had a realistic discharge plan, and who had

sufficient token savings for a substantial membership fee could, if vacancies existed, join a privileged group on the ward which freed them from most of the institutional constraints. Members received a credit card that permitted them considerable freedom to regulate their own behavior. It entitled them, not only to all the privileges within the token system, but additional advantages as well. They were provided, for example, choice dining and sleeping arrangements, extra passes on weekdays and unlimited pass privileges on weekends, and they could bank their money in the community without any restrictions on withdrawal.

The efficacy of this treatment program was evaluated in terms of several indices including both changes in the specific behaviors that were involved in the reinforcement contingencies and more generalized outcomes. Consistent with the

results of Ayllon & Azrin (1965), it was found that the target behaviors were restored quickly and dramatically after introduction of incentives. This is shown most clearly by the marked decrease in the frequency with which attendants had to awaken patients, assist them with personal grooming, make their beds, and prepare them for daily activities. The number of morning infractions dropped from a baseline rate of approximately 75 per week prior to reinforcement to about 9 after several months of treatment. The patients likewise displayed increased participation in group activities, which were also specifically reinforced performances. Some additional evidence that the incentive system was, in fact, a significant contributor to the observed changes is shown in patients' increased social participation when they were rewarded more generously, whereas participation in group activities declined

somewhat when the token rate was later reduced to its original level.

Among generalized changes observed were the patients' display of substantially more social communication as measured by behavioral ratings, and greater interest in the outside community. This was reflected in increased use of passes, from an average of 9 per week before treatment to 37 per week after the incentive program had been instituted. Indeed, 26 percent of the patients left the hospital on daytime or overnight passes for the first time in many years, and one patient, for whom the hospital had become a permanent abode, ventured out for the first time in 43 years!

Discharge rates also verified the beneficial effects of the new reinforcement practices. Twenty-one patients left the hospital via the



privileged group, almost double the discharge rate for the same ward the previous year. The overall findings of this project indicate that alteration of contingency structures in a hospital social system can not only counteract the stupefying effects of prolonged institutionalization, but also produce generalized increases in self-directive and interpersonal modes of behavior.

A comprehensive treatment program does not simply aim to produce effective functioning in circumscribed areas within the institution, but rather to establish the requisite social and vocational competencies for successful self-management in the larger society. Institutionalized patients who possess marketable skills and who have a reasonably adequate environment to which to return can undoubtedly benefit greatly from programs that provide adequate guidance and reinforcing support for

adaptive patterns of behavior. Favorable outcomes can be further ensured by the use of transitional facilities embodying contingency systems that foster gainful employment and progressively more active participation in community life. However, chronically hospitalized patients, who are grossly lacking in personal and social resources, present the most challenging rehabilitation problem. Results based on follow-up studies disclose that approximately 70 percent of chronic patients who are discharged from mental hospitals return within 18 months regardless of the type of treatment received during the period of hospitalization (Fairweather, Simon, Gebhard, Weingarten, Holland, Sanders, Stone, & Reahl, 1960; Fairweather & Simon, 1963). As a consequence of this high readmission rate, hospitals are faced with a continuously growing population of chronic patients. Moreover, for

reasons given earlier, most of these patients are destined for a permanent institutional residency.

It is generally acknowledged that unless the social roles and competencies acquired by patients in institutional settings approximate the behaviors essential for meeting the more rigorous demands of community living, it is highly unlikely that they will be able to achieve a satisfactory independent adjustment. With this in mind, Fairweather and his coworkers (Fairweather, 1964) conducted an elaborate field experiment to determine whether chronically hospitalized patients can be restored to the community by providing them with opportunities to develop, within the hospital, some of the problem-solving and self-management behaviors required in the outside community.

The participants, predominantly schizophrenic patients, were matched on the basis of age,

diagnosis, and length of hospitalization and assigned randomly either to a conventional hospital program or to patient-led problem-solving groups. The treatment programs were similar in all respects, with the single exception that patients in the two groups took part in different activities for two hourly sessions each day. Those in the traditional treatment program participated in individual work assignments and a recreational hour during the time that their counterparts engaged in group work assignment and decision-making sessions.

In the task group condition an incentive system was applied in which the participants received increasing monetary and pass privilege rewards, contingent on the development of four levels of progressively complex social and self-directive behavior. The responsibility for evaluating and modifying the behavior of each

member, and for implementing the incentive system, was delegated to the group. It met daily to discuss the progress of individual members, their problems, and constructive ways in which these might be managed or modified. Any staff member could be invited to furnish factual information needed by the group to reach a reasonable decision, but the staff refrained from recommending what courses of action should be taken.

Each week the group also met with the staff to present their recommendations concerning each individual member's step-level and concomitant money and passes for the following week, the actions taken with respect to problem behavior, and their evaluations of the progress, morale, and functioning of their group. The staff then either approved all recommendations made by the group, approved some and disapproved others, or

rejected their recommendations. If warranted, the entire group could be rewarded or penalized by being raised or lowered one step- level, depending upon the appropriateness of the group's decision-making behavior.

Thus, the social-role behaviors required of both the patients and the staff differed markedly in the two programs. In the conventional treatment the hospital staff was primarily responsible for regulating the patients' daily activities, for making decisions concerning money allotments, passes and other types of privileges, and for implementing disciplinary and remedial courses of action. The patients, in turn, occupied the usual subordinate, patient role. By contrast, although the staff in the group decision-making program could overrule or amend action-oriented recommendations proposed by patients, staff members functioned primarily as consultants and

resource persons. This social structure provided patients considerable freedom and responsibility to manage their own activities and to make decisions that significantly affected each other's behavior.

In an effort to control for possible effects of different staff characteristics on patients' social behavior, the two sets of staff members changed wards halfway through the experiment. The relative efficacy of the treatment approaches was objectively assessed in terms of diverse criteria including a multitude of behavior ratings, sociometrically derived preferences, self-evaluations, administrative indices, and attitude questionnaires. Most of the behavioral assessments were conducted throughout the 27 weeks that the experiment was in progress, while others were obtained at the completion of the study, and six months later.

The voluminous data from this ambitious, well-executed field study demonstrate that the program specifically designed to reinstate interpersonal responsiveness and self-directive behavior in patients yielded consistently superior outcomes. Patients in the latter treatment condition rapidly formed cohesive groups, in which the members exhibited increasing mutual interest, help, and responsibility. They organized their own employment group, interviewed and counseled patients, and assumed full responsibility in locating employment for eligible members. They also established informal educational programs taught by group members who possessed specialized skills or knowledge.

The contrasting ward climates are even more strikingly revealed in patients' specific attitudes and social behaviors. Relative to the patients receiving the traditional care and treatment, those



in the graded reward program showed significantly greater interpersonal responsiveness, more verbal communication, and less bizarre behavior. Some of these comparative data are summarized graphically in Figure 4-8. In their sociometric and questionnaire responses, patients in the incentive-group program viewed their fellow members more positively; they regarded their treatment as more difficult and demanding but, at the same time, more beneficial; and they displayed greater optimism about their eventual discharge, future employment, and development of close interpersonal relationships upon their return to the community. These positive expectations were largely confirmed by the follow-up study. Compared to patients who received the traditional treatment, those who participated in the incentive-group program spent a shorter time in the hospital, were more frequently gainfully

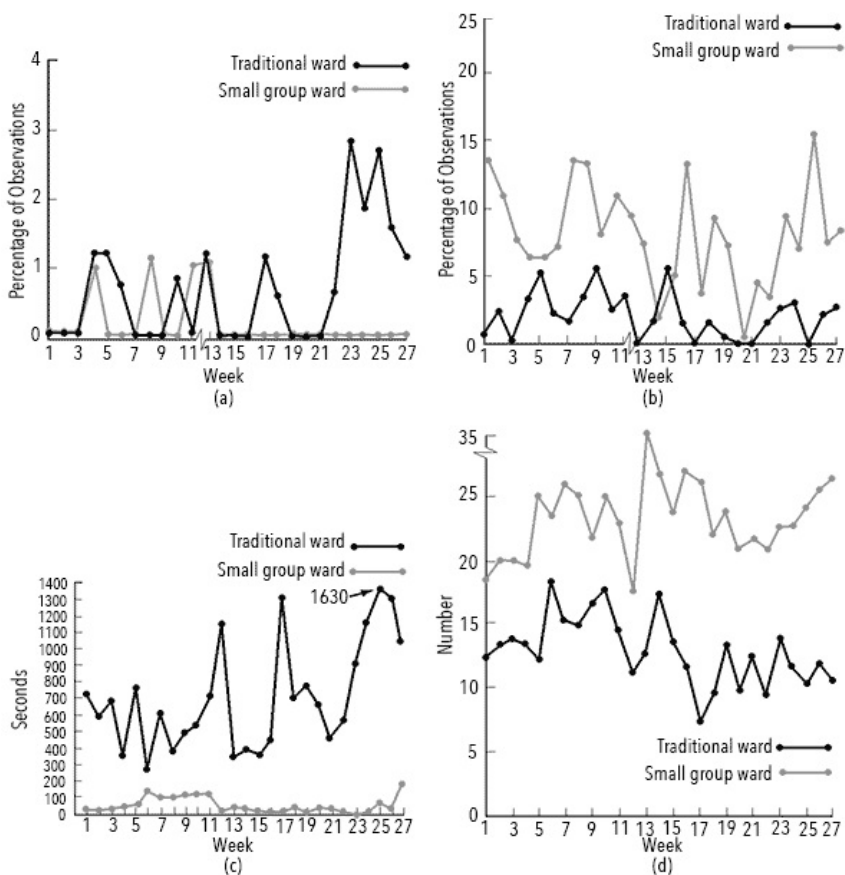


Figure 4-8. Behavioral changes displayed by patients receiving either conventional hospital treatment or a program designed to establish problem-solving and self-management competencies, (a), percentage of observations during which patients manifested pathological behavior; (b), percentage of observations during which patients engaged in social interactions involving three or more persons; (c), total time the two groups of patients remained silent during weekly ward meetings; (d), mean number of patients participating in weekly ward meeting discussions. Fairweather, 1964.

employed, met with friends more regularly, and engaged in a higher level of verbal interaction with others.

It is interesting to note that in the present treatment program favorable generalized changes were effected in patients' behavior even though the staff explicitly provided only a general set of contingencies and relatively few concrete incentives. The investigators report that the monetary and pass privilege rewards were essential in the early phase of treatment, but after the patients established mutually rewarding relationships with each other, pride in their accomplishments, competitiveness with other groups, and mutual social approval and disapproval became the major reinforcing events regulating their day-to-day behavior. These findings suggest that patients can successfully modify and sustain each other's behavior through

mutual social reinforcement provided that behavioral guidelines and incentives are furnished, conditions are arranged that lead to the formation of a cohesive group, and the responsibility for change is primarily delegated to the group. Since the behavioral demands that a group places upon its members through common agreement are less likely to be resisted than staff-imposed contingencies, a group-mediated treatment program may achieve a more natural and higher degree of change in social behavior. In a project evaluating the efficacy of a token reinforcement system for treating predelinquent boys, Phillips (1968) found that large token penalties administered by the staff to the entire group failed to reduce their undesired behavior, whereas it was promptly and enduringly eliminated when lesser fines were individually levied by a group member who assumed

managerial responsibility for the troublesome activities (Figure 4-9).

The success of group-managed contingency systems still relies upon reinforcement processes, except that interpersonal reinforcers are favored over material rewards, and group members rather than the staff serve as the main reinforcing agents. Although Fairweather emphasizes the autonomous functioning of the groups, and the gradual emergence of group norms, it should be noted that the staff members continuously imposed specific contingencies on the groups, both in their written communications describing problem behaviors of individual members that the group was expected to control, and in their evaluative responses to the groups' decisions. It is therefore not surprising that each group evolved patterns of reinforcement that fostered desired behavioral changes. In the absence of adequate

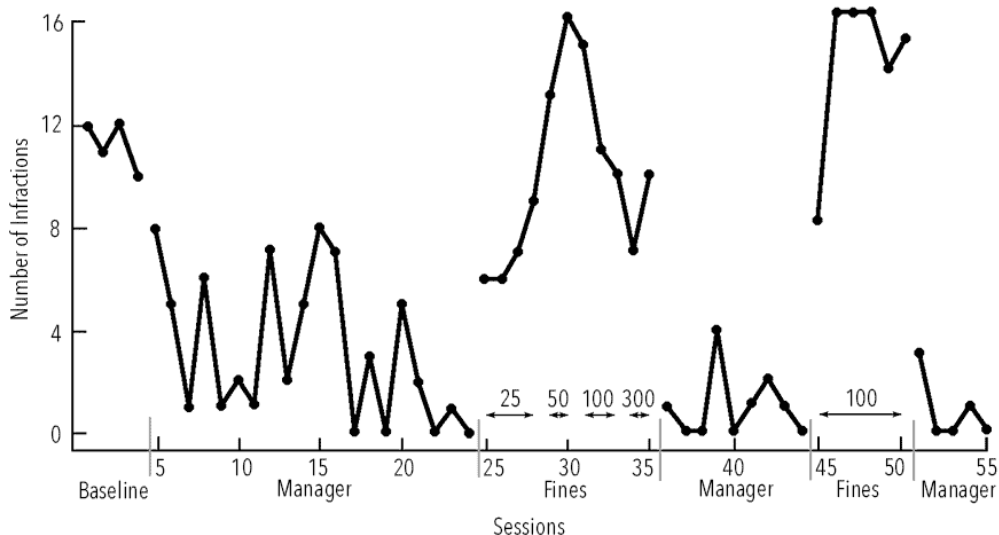


Figure 4-9. Number of infractions occurring under two types of contingency systems: (1) In the manager condition one of the boys purchased a managership which assigned to him the responsibility for selecting individuals to perform the tasks and for paying or fining them according to the quality of their work. The manager received or lost monetary points according to the number of tasks completed. (2) In the fines condition the staff imposed penalties on the entire group for failure to perform the required tasks. The numbers under the arrows indicate the number of monetary points the group was fined. Phillips, 1968.

staff monitoring of a group's activities, particularly in early stages of treatment, the types of reinforcement contingencies that a given patient group might adopt would be left to fortuitous factors.

In view of the generalized changes in interpersonal responsiveness achieved by Fairweather, it would be of considerable interest to compare systematically the relative efficacy of staff-administered reinforcement systems involving an elaborate set of precise contingencies of the type employed by Ayllon, and Atthowe & Krasner, with one in which some incentives are used to foster strong group cohesiveness but controlling functions are in large part delegated to group members. The merits of these two approaches, which involve many common principles, could be easily combined to form a program in which a specified set of reinforcement

contingencies is developed and implemented by the patients themselves under staff guidance.

Another important contingency variable that requires systematic investigation is concerned with whether rewards are tied to individual performances or to entire sets of behavior. In the latter system, successive phases are devised which require increasingly higher levels of functioning in several different areas. As individuals progress through these sequential steps by adopting the requisite patterns of behavior they receive increased rewards and privileges. In treating a group of delinquent adolescents, Martin, Burkholder, Rosenthal, Tharp, & Thorne (1968) found that a phase-contingent system of reinforcement produced more rapid and uniformly positive changes in behavior than a previous system in which specific responses were individually reinforced. Indeed, the latter



contingency structure produced much wrangling and accusations of unfairness because, in an effort to ensure adequate reinforcement of progress made by youngsters functioning at different levels, they were required to meet different behavioral standards and achievements for similar rewards. The authors attribute the greater efficacy of the reinforcement system linked to role behaviors to the fact that clear specification of sequential goals and the behaviors required for promotion from one phase to the next serve as prompts and positive guides for changes in desirable directions.

In most applications of reinforcement principles to severely incapacitated persons, behavioral improvements are initially achieved by immediate reinforcement of specific performances. However, as their competencies are increased, individuals are promoted to a phase system analogous to hierarchical reinforcement

structures existing in community life.

Despite the favorable changes in behavior produced by the incentive group program developed by Fairweather, readmission rates for patients who had received the different forms of treatment were essentially the same. Eighty percent of the short-term psychotics maintained an adequate community adjustment, whereas only 45 percent of those who had been institutionalized for two or more years remained outside the hospital by the end of six months. These outcome data provide further justification for questions that are increasingly raised about the wisdom of conducting behavioral change programs within hospital settings. The behavioral requirements for effective hospital and community adjustment differ in so many fundamental respects that, even though institutional reinforcement practices may establish and strengthen some of the response

patterns consistent with those in the larger society, most of the social and vocational behaviors that can be developed in hospitals have limited transfer value. More radical departures from conventional institutional approaches are clearly required if chronically hospitalized psychotics are to be restored to society as socially productive members.

A second experimental project conducted by Fairweather and his associates (Fairweather, Sanders, Maynard, & Cressler, 1969) represents one example of an innovative program that holds considerable promise for the rehabilitation of chronic psychotics. Based on evidence that the type of social environment to which patients return is the major determinant of successful community adjustment, Fairweather decided to institute the social subsystem that proved highly successful in the hospital in a community

residence where behavioral requirements are essentially identical to those of any member residing in the community. One group of chronic patients was formed in the hospital and, after they achieved a sufficient degree of organization and cohesiveness within the hospital and adequate training in decision-making behavior to function effectively, the group was transferred to a lodge located in the community. There the members were responsible, as a unit, for regulating each other's behavior, managing the affairs of the lodge, including the purchase and preparation of food, keeping records of expenditures and personal loans from their own savings bank, and, when necessary, obtaining information about drug dosages from a local physician as well as administering the necessary medication. In addition, the patients operated an income-producing business (a janitorial service, both

commercial and residential, supplemented by yardwork, general hauling, and painting) in the community. They assumed major responsibility for receiving and processing work orders, arranging transportation to and from work, assignment of patients to specific jobs appropriate to their level of functioning, and management of the monetary incentive system. Initially a research staff member coordinated the daily operations of the lodge, but later this function was performed even more successfully by a lay person with periodic consultation provided by a member of the research staff. The primary function of the consultation was to supply needed information, to assess the group's functioning, to review any personal or organizational problems that arose, and to evaluate the group's recommended solutions. The income derived from the business, which amounted to a total of \$52,000 over a

period of two and three-fourths years, was distributed weekly among the participants with each member's share being determined by his productivity and the amount of responsibility that he assumed in the organization.

In order to evaluate the relative efficacy of this community-based program, an individually matched group of 75 patients received the group decision-making treatment in the hospital along with the traditional types of assistance and outpatient therapy following discharge from the institution. Repeated measurements were made of changes in patients' self-evaluations, attitudes, interpersonal behavior, and ability to maintain a satisfactory independent adjustment in the community.

Results of this project show that, within a supportive subcommunity, chronic marginal

individuals can manage their daily affairs and lead a worthwhile and constructive life. A forty-month follow-up study revealed that the experimentally created subsystem sustained patients in the community, whereas those treated in the hospital were unable to adjust to life on the outside (Figure 4-10). The differences between these groups are even more striking in their vocational functioning: the lodge system enabled patients to maintain gainful employment, while none of the patients who received treatment within the hospital setting were employed full time (Figure 4-11). These beneficial results were obtained at an individual cost of \$6 per day, as compared to \$14 at the hospital from which the participants were drawn, \$12 at a local state hospital, \$45 at a local private hospital, and \$56 at a local county hospital.

The main purpose of the type of residential program discussed above is to create a semi-

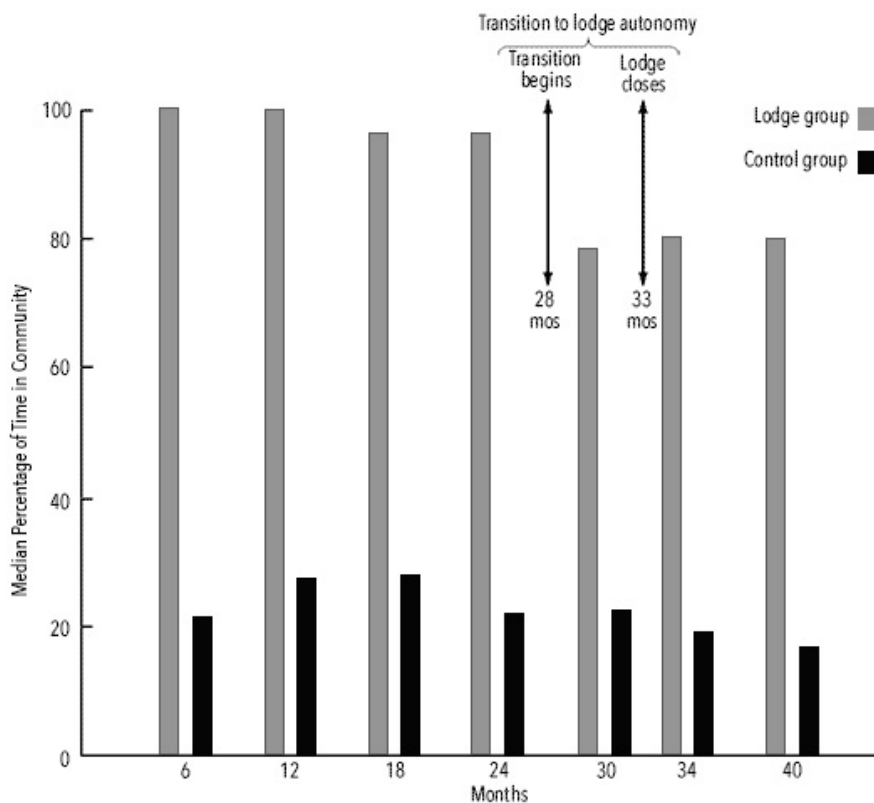


Figure 4-10. Percentage of time that patients in the lodge and hospital programs spent in the community for 40 months of follow-up. The lodge program was discontinued after 33 months. Fairweather et al., 1969.



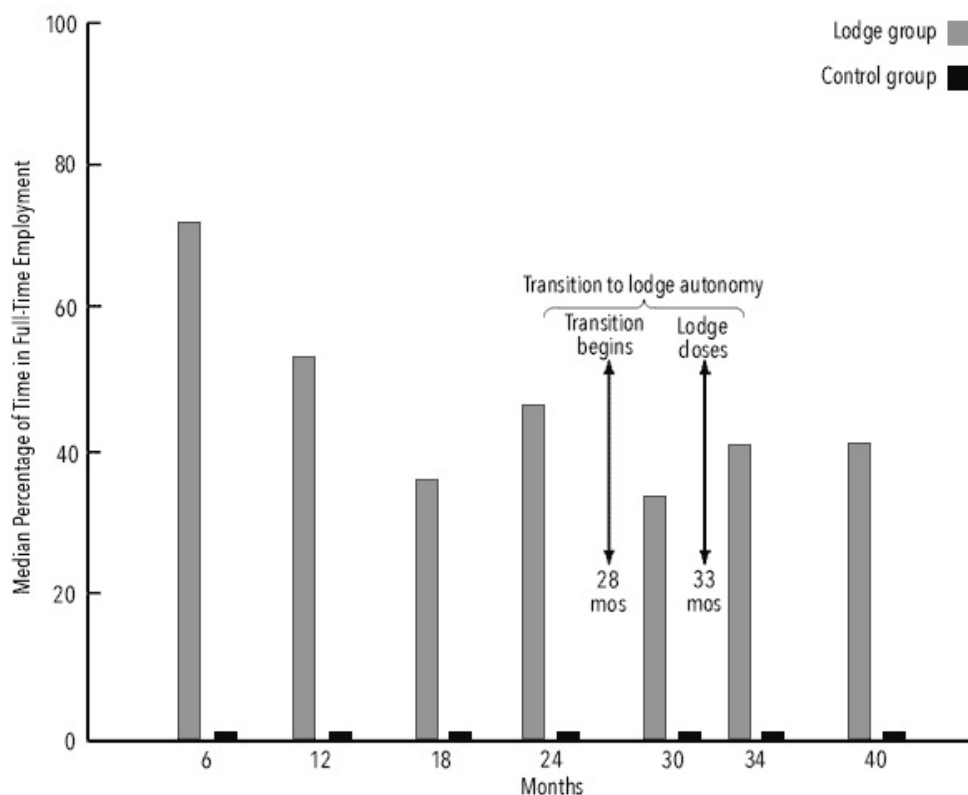


Figure 4-11. Percentage of time that patients in the lodge and hospital programs were employed full time for 40 months of follow-up. Fairweather et al., 1969.

autonomous subcommunity in which marginal individuals can function in a socially productive manner, rather than to serve as a transitional facility. Some of the participants may eventually leave after they have developed the social and vocational competencies required to live independently. However, those who have no immediate families to return to or little or no financial resources, and who are unlikely to gain employment individually in the open job market because of their advanced age, limited vocational skills, and stigmatization, may achieve the most satisfactory adjustment in their own supportive social system. Individually they may be unable to meet the demands of community life, but as a group they can function as self-supporting and productive individuals who would otherwise be institutionalized for the rest of their lives.

## *GROUP REINFORCEMENT SYSTEMS IN THE MODIFICATION OF DELINQUENCY*

In a program devised by Cohen (1968; Cohen, Filipczak, Bis, Cohen, Goldiamond, & Larkin, 1968) for overcoming educational deficits in adolescent delinquents, the institutional reinforcement practices are, in many respects, also analogous to the contingency structures that obtain in the larger community.

The adoption of, and adherence to, prosocial patterns of behavior is highly dependent upon adequate proficiency in educational and vocational skills necessary for legitimate acquisition of resources that are highly valued by the culture. Most delinquents are handicapped by gross deficits in the educational abilities requisite for satisfactory vocational adjustment. As a consequence, those who value costly possessions and the social rewards attendant upon symbols of high status are forced to resort to deviant means

for obtaining them. Regardless of whatever other objectives may be selected in the rehabilitation of delinquents, little progress can be made in altering antisocial behavior unless habitual offenders are provided with vocational skills that will permit legitimate attainment of desired social and material rewards. Therefore, the experimental program devised by Cohen focused primarily upon the creation of educational competencies and favorable attitudes toward academic pursuits.

The adolescent boys, who were randomly selected for the experimental program from the institutional population, presented exceedingly poor academic histories: All had dropped out of school, they showed little interest in academic matters, and none derived much intrinsic satisfaction from intellectual activities. A system of extrinsic rewards based on a point economy was therefore employed to establish academic

behaviors. Points earned for high achievement scores in programmed instructional courses and other academic activities could purchase favorable accommodations and a wide range of services and commodities. Starting at a base pay of \$10 to \$15 a week, payable on high scholastic achievement and a minimum number of hours of academic work, the boys could earn additional money points by studying.

Most coercive sanctions imposed on delinquents by correctional instructions were absent from this program. Rather, heavy reliance was placed on positive incentives, individual initiative, and self-determination. Consistent with the basic contingency system in daily life on the outside, boys paid for their private rooms (\$6 a week, or 600 points) and selected meal plans that varied in choice of foods. They used point currency to rent recreational items and private offices, and

to pay tuition for requested courses. They could also purchase admission to entertainment or leisure-time activities provided at a project lounge, and merchandise available in either the project store or through mail order catalogues. Whenever applicable, the prices of items corresponded to the rates in the outside community. Within this environment the boys were provided with considerable freedom: They determined their own study and bedtime routines, they selected their own leisure-time activities and planned their own outside programs, they aided in planning menus, and they had open mailing and visiting privileges.

A boy was free to choose not to participate in any of the scholastic or rehabilitative activities, but if his points fell below 1200 he was placed “on relief.” Although this problem rarely arose, while on relief status the boy lost his private room, was

served the regular institutional food, and enjoyed no extra luxuries. This system of treatment corresponds closely to principles suggested earlier for altering behavior on a positive reinforcement basis by creating an environment where noncontingent gratifications are provided at an adequate but low level, and in which the performance of desired modes of behavior produces further rewards. If such a system is well managed, hostile-resistive actions by participants should be markedly reduced because their own behavior determines their welfare and not management fiat.

Under environmental contingencies specifically designed to support learning, delinquent boys who had received few prior accolades for scholarship and were school dropouts worked productively at self-managed educational activities. They studied

conscientiously in their spare time, and gained more than two grade levels on standard achievement tests within an eight-month period. These favorable results suggest that reinforcing environments for learning can be successfully employed in the rehabilitation not only of delinquents, but of other educationally disadvantaged children as well.

The contingency system discussed above aimed almost exclusively at educational behaviors and, although beneficial changes in attitudes and social behavior were noted, no concerted effort was made to alter interpersonal response patterns. The contingencies could, of course, be easily extended to include cooperative, responsible, and self-controlling behavior which, supplemented with proficiency in a selected occupation, would remove the major personal barriers to a successful prosocial adjustment.



### *INTERDEPENDENT CONTINGENCY SYSTEMS*

The preceding social systems primarily involve group-wide contingencies, but reinforcements are still administered on an individual basis. Work payment arrangements, for example, are usually the same for all members of the group, although the actual compensation depends upon the type and amount of work performed by each person. Under such conditions, a member's outcomes are not affected by the behavior of others. One can, of course, influence the degree of social interaction between persons even on an individualistic reinforcement basis simply by rewarding cooperative responses (Cohen & Lindsley, 1964), or other forms of social behavior.

On some occasions a change agent may be called upon to increase the level of mutual responsibility, cohesiveness, commitment, and contribution to a common goal among all

members of a group. This objective can be accomplished most effectively by instituting reinforcement contingencies on a group basis. Under these circumstances individual rewarding outcomes depend upon the level of group performance and, conversely, censurable behavior by any given member may produce negative consequences for the entire group. By having people share in the consequences of their decisions and actions, the degree of social responsibility and involvement is thereby increased.

There have been some laboratory investigations of group productivity as a function of different types of group contingency structures. Glaser & Klaus (1966) found that group behavior was influenced by reinforcement contingencies in the same way as individual behavior when all members were required to perform correctly to

produce rewarding outcomes for themselves. Group output increased when correct team performances were positively reinforced, whereas the rate of correct responding declined when group performance no longer resulted in reinforcing consequences. On the other hand, a contingency structure in which a correct response by any member produced reinforcement for the entire group often resulted in a deterioration of performance for the group or individual members. The latter condition is analogous to naturalistic situations where individuals benefit from someone else's efforts. The decline of responsiveness can be easily offset by the use of a double contingency so that a given individual's outcomes are determined by both the extent of his own contribution and the group's overall performance. It will be recalled that Fairweather's residential treatment program relies upon this

type of contingency system in the allocation of monetary rewards.

Some suggestive evidence concerning the relative efficacy of individual and group contingency systems is provided by Wolf & Risley (1967). They studied the amount of disruptive classroom behavior displayed by a child in the absence of any special reinforcement and during subsequent periods when either she alone earned five points, or she and her immediate peers each earned one point for her commendable behavior. It is interesting to note that the child's activities were more effectively controlled under the peer contingency even though it produced only one-fifth of the amount of reinforcement provided on the individual basis. Apparently, through the group reward, change agents were able to enlist the peers' aid in modifying the behavior of their companion. The findings of the present case study,

and those cited earlier, are sufficiently interesting to warrant further systematic exploration of the effects of different types of group contingency structures on social performance.

Group-oriented reinforcement practices have been adopted on a society-wide basis in the Soviet Union for the explicit purpose of developing strong collectivistic morality in its citizenry (Bronfenbrenner, 1962). This aim is implemented by use of school collectives where children's behavior is regulated by rewards and punishments administered on a group basis, so that all members of a given social unit are affected by the actions of each individual. Socialization at the school is commenced in the primary grades by assigning children to row units. Daily records are kept of each group's performance on a variety of social and academic activities. The grades that a person receives are based on the overall

performance of his unit rather than his individual accomplishment, and, from time to time, the most successful rows are publicly acclaimed, and given special privileges. Collective achievement is further reinforced by introducing competition not only between rows, but also between classrooms, between schools, between districts, and so on. In this manner cooperative contingencies are maintained within groups of expanding membership, while simultaneously, strong competitive contingencies are instituted between progressively larger social units.

In addition to inculcating collective orientations through group incentives, the control and modification of behavior is delegated to the peer group. Initially teachers set the standards of behavior and evaluate the group's performance. As soon as possible, however, the responsibility for evaluating the behavior of individuals and for

administering rewards and sanctions is turned over to members of the social unit. This transfer is accomplished by designating row monitors for each activity to judge work assignments, to criticize shortcomings of their comrades, and to devise effective means for helping other members of one's collective. Whenever individuals are praised for their mutual aid, the contribution to group achievement is carefully noted.

Pervasive and unrelenting application of group-oriented systems of reinforcement which stifle autonomy and self-determination clearly are antithetical to goals that are highly valued in most societies. Therefore, where interdependent contingencies are instituted to increase group unity and responsibility, each member should also be given opportunities for independent accomplishment.

## Summary

The present chapter reviewed theories of reinforcement in terms of their relative emphasis upon associative-strengthening or incentive functions of reinforcers. Evidence bearing on alternative explanations of reinforcement effects in terms of drive reduction, sensory stimulation, and opportunities to engage in prepotent responses was also reviewed. The fact that markedly diverse events can assume reinforcing functions and their value is determined by relational rather than fixed properties present difficulties for the construction of an inclusive theory of reinforcement.

Since behavior is largely governed by its consequences, differential reinforcement has been extensively applied, both singly and in combination with other methods, to overcome behavioral deficits, to maintain existing response



patterns, and to alter deviant behavior which is supported by its rewarding effects.

Three sets of variables are importantly involved in effective implementation of reinforcement principles. First, it is essential to devise an incentive system that is capable of maintaining a high level of responsiveness over long periods. Without adequate incentives behavioral control is likely to remain weak and unstable. Second, the reinforcing events must be made conditional upon occurrence of the desired behavior. Although reinforcement practices are commonly used to modify behavior in natural settings, these efforts are often minimally effective because the intended consequences are poorly timed, the wrong responses may be inadvertently reinforced, and, even when appropriate contingencies are arranged, they are often only sporadically applied.

The third requirement concerns methods powerful enough to induce or to elicit the desired modes of response with sufficient frequency for them to be strongly established through positive reinforcement. Several different strategies can be used for this purpose. The most popular approach, though not necessarily the most efficient one, relies upon a process of gradually shaping emitted responses into desired patterns by selective reinforcement of successively closer approximations. However, in most cases complex responses can be more rapidly created by the provision of performance guides in the form of appropriate verbal or behavioral modeling cues. Another method, applicable when responses are already available but rarely exhibited, depends upon prompting and fading techniques in which any stimuli known to exercise strong control over the desired behavior are enlisted until its

incidence is sufficiently increased, after which the ancillary stimulus supports are gradually withdrawn.

The behavioral change process is further complicated because additional learning conditions must be arranged if established response patterns are to generalize beyond the specific treatment situation, and to persist long after the specially created contingencies have been discontinued. Enduring changes in behavior can be achieved by gradually reducing the frequency or magnitude of reinforcement; by shifting the locus of reinforcement from transitory change agents to favorable contingencies existing within the person's social milieu; and by altering the form of the events that assume reinforcing functions. Thus arbitrary extrinsic incentives, which may be necessary during early stages of treatment, can be gradually withdrawn and replaced by symbolic

cues signifying performance achievements coupled with self-evaluative and other self-reinforcing consequences. As such stimulus events which are more intrinsically related to performances acquire reinforcing capacity, personally valued patterns of behavior can be self-maintained with minimal external support.

Changes effected in social response patterns can be widely generalized by conducting treatment within natural social contexts, by directly modifying the reinforcement practices of persons who normally exercise some control over the crucial behavior, and by varying systematically the stimulus conditions under which the behavior is established.

Results of myriad projects in which requisite conditions are adequately arranged demonstrate that contingent reinforcement can be a highly

effective means of establishing and modifying diverse classes of response. This is most impressively revealed by studies in which tenacious deviant behavior is successively eliminated and reinstated by varying its social consequences. Such powerful replicative control over behavior not only has considerable therapeutic significance, but accents the influential role played by environmental contingencies in the regulation of behavior disorders: Conditions which are usually attributed to complex internal determinants presumed to be operating largely at an unconscious level respond in orderly fashion to external control.

In recent years there has been increased recognition that most social problems must be treated primarily at the social-systems rather than at the individual level. Therefore, considerable importance is attached to extensions of

reinforcement procedures demonstrating that widespread changes in attitudes and behavior can be achieved by applying organizational contingencies to members of a given group. Interdependent contingency systems, in which the outcomes for individual members are dependent upon the composite group performance rather than their own attainments, have also been successfully employed to increase the productivity and level of mutual support, responsibility and cohesiveness in social groups. Double reinforcement contingencies in which individuals' outcomes are jointly determined by the nature of their own contributions and by the group's overall performance are likely to produce the most socially productive functioning.

Although behavior can be effectively controlled by varying its positive consequences, negative sanctions are commonly employed, particularly in

efforts to reduce deleterious response patterns. The processes involved in aversive control are reviewed next.

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## Aversive Control

Negative consequences are widely used to modify behavior, but such practices are generally disavowed. There are several reasons, some rationally grounded and others unwarranted, why punishment is regarded with disfavor. One of the principal objections to aversive control stems from the widespread belief that internal, and often unconscious, forces are the major determinants of behavior. From this perspective, punishment may temporarily suppress certain expressions but the underlying impulses retain their strength and press continuously for discharge through alternative actions. Moreover, when punishment is described in behavior theory as having inhibitory

or suppressive effects, it also carries the implication that no expressed response tendencies remain active at a covert level and, therefore, require continual counteraction.

Both the immediate and long-term effects of negative sanctions are viewed with a less jaundiced eye when behavior is assumed to be largely determined by its consequences. As long as a given response pattern creates aversive outcomes of sufficient strength to override the effects of other maintaining conditions, it will not be utilized. If more effective means of securing desired outcomes are developed during this period, the behavioral changes initiated through punishment endure after the aversive contingencies have been discontinued. Thus, for example, if competitive behavior is rendered nonfunctional by arranging adverse consequences while cooperativeness proves more rewarding,

competitiveness will eventually be abandoned without any internal energy strains. When the person is behaving cooperatively it does not mean that he is actively suppressing a simultaneously aroused competitive response, any more than a person who is sitting is continually subduing a standing response that is simultaneously pressing for expression.

The use of aversive control is also frequently questioned on the grounds that it produces a variety of undesirable by-products. This concern is warranted, as we shall see later. Many of the unfavorable effects, however, that are sometimes associated with punishment are not necessarily inherent in the methods themselves but result from the faulty manner in which they are applied. A great deal of human behavior is, in fact, modified and closely regulated by natural aversive contingencies without any ill effects. On the basis

of negative consequences people learn to avoid or to protect themselves against hazardous falls, flaming or scalding objects, deafening sounds, and other hurtful stimuli; they change their clothing to remain comfortable in sweltering or frigid temperatures; and they engage in a considerable amount of behavior that is supported almost entirely by removal of irritants. In instances where certain activities can have injurious effects aversive contingencies must be socially arranged to ensure survival. Punishment is rarely indicted for ineffectiveness or deleterious side effects when used, for example, to teach young children not to insert metal objects into electrical outlets, not to cross busy thoroughfares against red signal lights, nor to perform behavior that would result in mutilation. Certain types of negative sanctions, if applied considerately, can likewise aid in eliminating self-defeating and socially detrimental

behavior without creating any special problems.

Punishment is rarely employed as a sole method for modifying behavior; but if it is used judiciously in conjunction with other techniques designed to promote more effective response options, such combined procedures can hasten the change process. In addition, aversive consequences are frequently used to modify deviant behavior that is automatically self-reinforcing upon occurrence and in cases where certain response patterns must be brought rapidly under control because of their injurious effects upon the performer or other persons.

The negative consequences may involve either the removal of positive reinforcers or the presentation of aversive stimuli. The events in the latter category may take the form of physical punishment, shock stimulation, unpleasant

auditory feedback, or verbal reprimands. In the former case response costs may be instituted or persons may be deprived of privileges, possessions, social contacts, and other positively reinforcing events to which they are accustomed. Although both operations represent forms of punishment, they not only have somewhat different effects on behavior, but they may produce different side effects and contrasting reactions toward prohibiting agents. Consequently, the research findings and applications of these two forms of punishment will be discussed separately.

### **Presentation of Negative Reinforcers**

Theories and research regarding punishment have been primarily concerned with the extent to which response patterns can be removed through direct administration of aversive stimuli. For

obvious ethical reasons studies of the behavioral changes produced by punishment of high intensity or of long duration have been confined to infrahuman subjects. Laboratory investigations of the effects of punishment on humans typically employ either relatively weak physical stimuli or negative symbolic consequences. In these studies punishment is applied either to responses that are concurrently being maintained on an intermittent schedule of positive reinforcement or to response patterns that are undergoing extinction.

### *THEORETICAL CONCEPTIONS OF PUNISHMENT EFFECTS*

When aversive consequences follow upon any behavior, they generally produce a reduction or cessation of responsiveness. After the aversive contingencies have been discontinued the behavior sometimes reappears, suggesting that punishment suppresses response tendencies but

does not eliminate them. Under some conditions, however, punishment may produce enduring changes in behavior. As will be shown later, the degree to which behavior is positively reinforced is one determinant of both the reductive power of punishment and the extent to which punished responses are subsequently reinstated. In addition to the reward contingencies maintaining the punished behavior, the effects of punishment may vary considerably as a function of many other variables (Azrin & Holz, 1966; Church, 1963; Solomon, 1964) including the intensity, duration, frequency, and distribution of aversive consequences; their temporal relation to the behavior to be modified; the strength of punished responses; the availability of alternative behavioral patterns that are positively reinforceable; the presence of discriminative stimuli that signify the probability that a given



performance will result in adverse consequences; the level of instigation to perform the negatively sanctioned behavior; and the characteristics of punishing social agents. The degree of control exercised by aversive outcomes over behavior in any particular case is, therefore, highly dependent upon a host of other operative variables in addition to the punishment contingencies.

Several theoretical formulations have been advanced to account for the varied behavioral effects produced by different types of punishment. *Conditioned emotionality* theories (Estes, 1944), for example, primarily attribute the effects of punishment to emotional reactions that are classically conditioned to environmental stimuli during the course of aversive treatment. Later, exposure to the threatening situation generates emotional arousal that may disrupt or inhibit responding. Major support for this view comes

from countless studies demonstrating that behavior can be suppressed by the presentation of environmental stimuli that had been previously paired with aversive experiences. The theory of punishment advanced by Mowrer (1960) assumes that negative emotions are conditioned not only to environmental stimuli but also to proprioceptive cues generated by the punished behavior itself.

According to *competing-response* interpretations (Guthrie, 1935), punishment produces behavioral changes by eliciting incompatible responses in the presence of cues that formerly controlled the punished behavior. Competing responses presumedly are directly conditioned by contiguity to stimuli present at the time of punishment. The generality of this nonmediational explanation is most seriously challenged by results of experiments in which previously neutral stimuli are endowed with

response-inhibiting properties under conditions where animals are skeletally immobilized by curare to prevent motor responding (Rescorla & Solomon, 1967). Nevertheless, in ordinary circumstances punishment activates instrumental responses as well as fear; consequently, punishment can produce markedly different behaviors under similar levels of emotional arousal depending upon the types of responses that it originally evoked (Bolles, 1967). The same punishing stimulus may thus accelerate or retard performance of the same behavior depending upon whether it is applied in such a way as to evoke responses that are compatible or in conflict with the ongoing activities (Fowler & Miller, 1963).

Whereas the preceding theory construes punishment effects in terms of competing associative learning, *avoidance conditioning*

explanations (Dinsmoor, 1954) emphasize the reinforcing consequences that are produced by, and serve to maintain, incompatible behavior. To the extent that withdrawal, avoidance, and response inhibition provide relief from disturbing stimulation the behavior is thereby reinforced.

The above-mentioned theories emphasize the motivating, reinforcing, and response-eliciting capacity of punishment. On the other hand, *discrimination* hypotheses (Holz & Azrin, 1961, 1962) highlight the informative function of punishing events. The inhibitory effects produced through vicarious punishment, for example, result in large part from the information conveyed to observers that certain types of performances are negatively sanctioned in particular situations (Bandura, 1965). The discriminative properties of punishment are also clearly revealed by experiments in which the temporal order of

punishment, reward, and extinction are systematically varied. Severe punishments that regularly precede reward come to signal positive reinforcement and accelerate responding; conversely, otherwise weak and ineffective punishments that precede the removal of rewards decrease responding. Similarly, punishments that initiate a period of relief from further painful stimulation become safety signals that lead to increased responsiveness (Hendry & Van Toller, 1964).

Further evidence of the way in which punishing stimuli can acquire markedly different properties through their relation with other reinforcing events is strikingly demonstrated by Sandler and Quagliano (1964). After monkeys learned to press a lever to avoid being shocked, a second contingency involving self-administered painful stimulation was introduced. A lever press

prevented the occurrence of the original shock, but it also produced an electric shock of lesser magnitude. As the experiment progressed the self-administered shock was gradually increased until it equalled the aversive stimulus being avoided. However, the animals showed no reduction in the frequency of self-punishing lever-pressing responses though this behavior no longer served as a “lesser of two evils.” Even more surprising, after the avoided shock was completely discontinued but lever-pressing responses (which had now become objectively functionless) still produced painful consequences, the animals continued to punish themselves unnecessarily with shock intensities that they had previously worked hard to avoid. Anyone observing the needless self-injurious behavior of these animals without knowledge of their prior learning history would undoubtedly be baffled by their tenacious

“masochism.”

Findings of a study by Ayllon & Azrin (1966) identify conditions under which a formerly punishing stimulus can not only maintain responding through its informative value, but also serve as a positive reinforcer to strengthen new performances. After white noise completely suppressed a rewarded response in chronic schizophrenics, the white noise was then intermittently paired with tokens having reward value. Later, contingent noise alone maintained several thousand responses on a new task. The preceding experiments illustrate how punishing events can achieve enduring reinforcing functions that become dissociated from the original conditions of reinforcement. The resultant self-punitive behavior, whether maintained through fear of threats that no longer exist or by anticipation of occasional rewards that are no

longer forthcoming, is clearly inappropriate if viewed in terms of objective reality.

In the material presented above we reviewed separately the various effects that punishing stimuli can have on behavior. Most theorists subscribe to a multi-process conceptualization of the manner in which punishment achieves reductive effects and the factors that govern any subsequent recovery of punished responses. According to this view, painful stimulation produces both generalized emotional arousal and escape- withdrawal responses, which are usually incompatible with and, therefore, capable of replacing the ongoing behavior. Any environmental stimuli and responses that regularly precede or accompany the aversive experiences acquire, through their contiguous association, the capacity to arouse emotional reactions for some time after punishment has



been discontinued. In addition to emotional conditioning, any responses that successfully terminate or avoid aversive stimulation are instrumentally reinforced. The punished responses remain suppressed as long as the threatening events maintain their capacity to generate prepotent fear reactions and incompatible avoidance behavior. This period provides the opportunity for other modes of behavior to be established which, if sufficiently strong, will permanently supplant punished response tendencies. However, in the absence of adequately rewarded alternatives, after punishment has been discontinued, the aversive properties of the maintaining stimuli may be extinguished through either repeated exposure to fear-provoking situations or elicitations of partially suppressed responses without adverse consequences, by observation of nonpunished

performances, or by other informative means. Under these types of conditions inhibited behavior will eventually reappear.

### *LOCUS OF AVERSIVE CONTROL*

As noted in the preceding discussion several alternative interpretations have been proposed concerning the source of the controlling stimuli for inhibitory processes created through punishment. According to one explanation, control primarily resides in *environmental stimuli*. That is, if a person regularly undergoes punishing experiences in a particular situation, the environmental cues, through their endowed emotion-provoking properties, produce either generalized suppression of behavior, avoidance of the threatening situational events, or activities designed to prevent their recurrence.

A second interpretation assumes that aversive

control resides in the *punished behavior* itself. When punishing consequences are made contingent upon the occurrence of certain types of responses, it is assumed that proprioceptive cues accompanying the responses acquire the capacity to arouse conditioned emotional reactions. Aversive stimulation generated by initiation of previously punished behavior prevents completion of the action sequence. Response inhibition is believed to be reinforced by the termination of response-produced emotional arousal. Thus, in the latter case, individuals learn to avoid self-generated distress by suppressing the negatively valenced behavior.

A number of investigators have compared the suppressive power of punishment when it is administered either on a response-contingent basis or in conjunction with specific environmental stimuli independently of the

ongoing behavior. These studies reveal that both types of aversive contingencies decrease responding, but there is disagreement as to which method produces greater behavioral suppression. In the original experiment, Estes (1944) found that animals which had been shocked only at times when they were not engaging in lever-pressing behavior displayed essentially the same degree of suppression and subsequent recovery of lever-pressing responses as subjects whose punishment was strictly contingent upon the occurrence of the response. In a further test of whether suppressive effects are governed by environmental stimuli or response-produced cues, animals whose lever-pressing responses had been punished were left in the situation for an adaptation period with the lever removed. This arrangement prevented elicitation of the punished response but permitted the neutralization of threatening situational cues.

A subsequent test for extinction revealed that mere re-exposure to the fear-provoking situation with no further unpleasant experiences resulted in almost complete extinction of conditioned suppression. The findings of this study thus suggested that internal cues accompanying the punished response exercised relatively little influence upon the inhibitory process.

Hunt & Brady (1955) extended the above research in a comparative study of the influence of response-contingent and stimulus-correlated punishment upon the acquisition, generalization, and extinction of conditioned suppression of responses that were intermittently rewarded. For subjects in the stimulus group, shocks were contiguously associated with a tone, but lever-pressing responses were never punished; on the other hand, in the response condition, the tone was presented and animals were shocked only

when they pressed the lever in the presence of the auditory stimulus. Both procedures resulted in almost complete response suppression whenever the tone was presented. The method designed specifically to endow the environmental cue with aversive properties, however, produced greater emotional disturbance, and greater generalized inhibition that was more resistant to extinction. Essentially identical results were obtained in an earlier study (Hunt & Brady, 1951) even though subjects in the response-contingent treatment received more shocks. In a well-designed experiment that equated for the number and temporal distribution of shocks, Hoffman & Fleshier (1965) found that animals that were punished only if they responded in the presence of certain cues displayed less behavioral suppression and extinguished more rapidly than their counterparts that were punished during

presentations of the same cues without regard to their behavior. The foregoing results thus provide evidence that, under certain conditions, inhibitions are primarily situation- rather than response-bound.

At variance with the above conclusion, Azrin (1956) found that response-produced punishment was considerably more effective than noncontingent aversive stimulation in suppressing rewarded behavior. Azrin attributes the conflicting results to the fact that subjects in his experiment received severe shocks over an extended time, whereas previous studies had employed relatively brief periods of punishment. This interpretation does not fully explain the diverse results, because Boe & Church (1967) report that response-contingent punishment is more suppressive than noncontingent shock even when administered during a brief period.

Moreover, Camp (1965), employing a wide range of shock intensities, found that the suppressive effects of response-contingent punishment were greater than the inhibitory effects of noncontingent punishment, but the differences between the two procedures were relatively small.

Response inhibition is most likely to be highly situation-bound when aversive experiences occur repeatedly in the same setting. If, on the other hand, selected responses are punished in the presence of specific stimuli but incur no negative consequences within the same environment when other factors are absent, then omnipresent stimuli are less likely to become endowed with strong suppressive power. Under natural conditions, of course, punishment is seldom contingent upon behavior alone; nor are people invariably punished in certain situations. Rather, the same behavior may be permissible or punishable in the



same settings depending upon the person toward whom the behavior is directed, the role occupied by the performer, the time and specific circumstances under which the behavior is exhibited, the instigating conditions, and many other factors.

Peripheral theories of response inhibition that emphasize skeletal responding and its attendant proprioceptive feedback cannot adequately account for the highly discriminative manner in which the same responses are freely performed or suppressed under slightly differing circumstances. Regulation of human behavior on the basis of punishing experiences is undoubtedly mediated to a considerable degree through central mechanisms. The major theoretical issues and supporting evidence concerning *symbolic control* of responsiveness, which constitutes a third locus of aversive control, is presented in the final

chapter of this book. This view assumes that, on the basis of information conveyed through prior response consequences experienced in conjunction with different situational, temporal, and social cues, individuals infer the probability that a given course of action will be ignored, rewarded, or punished. Behavior is then partly guided by anticipatory consequences that are symbolically produced. That is, anticipatory aversive consequences will have response-inhibiting effects, whereas anticipation of rewarding outcomes will facilitate performance of the same behavior. In addition to the influence of expectant outcomes, self-evaluative consequences also figure prominently in the self-regulation of behavior.

A number of studies employing punishing operations have been conducted with children in an effort to elucidate internalization processes. In

a comprehensive monograph, Aronfreed (1968) conceptualizes internalization as essentially a process in which aversive or pleasurable affective states become attached to both response-produced cues and their cognitive representations. This outcome is presumably achieved on the basis of classical conditioning of anxiety to the proprioceptive stimuli inherent in the action itself and, through the temporal gradient of reinforcement, to its behavioral and cognitive precursors. Thereafter, stimuli accompanying preparatory movements, or even intentions, arouse anxiety which in turn prevents further responding. Behavioral suppression is self-reinforced by the resultant reduction in anxiety. Thus, according to this view, behavior becomes internalized or self-maintained when changes in affective states, which constitute intrinsic reinforcing consequences, are mediated by

response-produced cues.

Empirical tests of the affective feedback theory of internalization have primarily investigated behavioral suppression as a function of timing of punishment. In the typical experimental paradigm, on each of a series of trials children are asked to choose between a highly attractive toy and one which is relatively uninviting. In one condition the experimenter verbally reprimands children as soon as they make a motion toward the attractive toy; in other treatments children are verbally rebuked only after they have picked up the toy and handled it for varying periods of time. In the test for internalized behavioral suppression children are presented with a highly attractive and an uninteresting toy and it is noted whether or not they touch the attractive object during the experimenter's absence. The rationale for selecting the temporal variable is that punishment

at the initiation of a transgression is expected to attach maximal anxiety to cues that accompany preparatory responses; as a result, behavior is suppressed in its early stages. On the other hand, if punishment is administered following transgression, anxiety and its attendant inhibitory responses are not evoked until after the disapproved act has been completed.

Before evaluating the main findings of these studies it should be noted that tests of internalized behavioral control typically involve so many external stimulus supports that response suppression cannot be attributed solely to intrinsically mediated consequences. Post-training measures of self-control are characteristically obtained by the same experimenter, during the same experimental session, in the same experimental room, in which children are presented either identical or similar stimulus

objects possessing the same relational properties as the stimuli utilized during training. Although the punishing agent absents himself from the room, nevertheless many controlling external cues remain. It would, in fact, be of interest to study the progressive decrease in self-controlling responses as progressively more cues common to the punishment situation are removed.

Results of several experiments based on this procedure (Aronfreed, 1968; Aronfreed & Reber, 1965; Benton, 1967; Walters, Parke, & Cane, 1965) show that children who have been punished early in the response sequence deviate less frequently than children punished only after completion of the transgression. Moreover, the longer that punishment is withheld while children are engaging in the deviant behavior, the weaker the subsequent behavioral suppression. These findings have been interpreted as providing strong

evidence that behavior is regulated by affective consequences conditioned to sequential intrinsic stimulus correlates of a punished act. Results of animal experiments investigating the effects of delay of punishment on resistance to temptation (Solomon, Turner, & Lessac, 1968) are also frequently cited as corroborating the intrinsic mediation of behavioral suppression.

Findings yielded by the timing-of-punishment experiments cannot be meaningfully interpreted with respect to the affective feedback hypotheses because, among other methodological problems, the timing manipulations involve a confounding of variables. In the early punishment condition transgressive behavior produces only punishment, whereas in delayed conditions the behavior receives both immediate reward and subsequent punishment. The suppressive effect of instant reward followed some time later by punishment is

much weaker than punishment alone. In the study conducted by Solomon, for example, food-deprived puppies that were swatted by the experimenter as they touched forbidden food exhibited stronger resistance to deviation than puppies that were punished shortly after they had begun to consume the palatable horsemeat. The difference in response inhibition, which has been often attributed by other authors to the attachment of anxiety at different points in the sequence of response-produced cues, simply demonstrates that a response is more effectively inhibited by punishment alone than if it is initially rewarded and then punished. Confounding of reward and punishment effects, as Solomon points out, is advantageous for understanding natural socialization practices, but the data are of limited value for elucidating intrinsic conditioning processes.



It is likewise difficult to ascertain whether similar differences obtained in investigations cited earlier derive from sequential aversive conditioning of response-produced cues, or from the fact that in late-punishment conditions children are rewarded by being allowed to play briefly with a highly attractive toy before the reprimand is administered. As might be expected from the response-enhancing effects of positive reinforcement, the longer children are allowed to engage in the rewarding transgressive behavior the weaker is the subsequent punishment. On the other hand, when children are punished almost immediately upon committing the deviant act (Parke & Walters, 1967; Walters & Demkow, 1963), differences in response suppression between early-punished and late-punished subjects become quite small and, for the most part, statistically insignificant. The latter negative

results have been attributed to insufficient separation of sequential stimulus components in early- and late-punishment conditions, but an alternative interpretation may be cast in terms of curtailment of confounding rewarding effects which occur under delayed punishment.

It also seems highly probable that a person who reprimands a child even before a deviant act actually occurs would be viewed as considerably more forbidding and punitive than one who shows no disapproval until after the child has engaged in the transgressive behavior for some time. Indeed, in the latter case, the disciplinarian must appear to be a more lenient, or at least an inconsistent, person. Early-punished children may therefore be reluctant to transgress not because of attachment of affective states to incipient response-produced cues, but rather due to stronger anticipatory fears evoked cognitively by the stricter disciplinarian.

In addition to the methodological problems considered above, the type of discrimination task employed in most timing-of-punishment experiments is not the most suitable one for determining the extent to which response suppression is mediated by its proprioceptive cues. This is because selection of both attractive and unattractive objects involves virtually identical reaching responses, and therefore arousal of the same pattern of interoceptive stimulation. Consequently, to the extent that anxiety is conditioned to cues inherent in the response itself, the act of reaching for the unattractive object should be equally suppressed. Demonstration of proprioceptive stimulus control of behavior would require subjects to make distinctive responses, each producing dissimilar patterns of internal stimulation which would have been associated with differential consequences.

Moreover, in order to assess what contribution, if any, is made by proprioceptively aroused affects to response suppression, it would be necessary to measure the independent effects of cognitive discriminations and symbolically generated affective consequences. By analogy with the timing-of-punishment experiments, a person reaching for a repulsive snake and for a savory dessert would in all likelihood experience aversive and pleasurable emotional states, respectively. Since, however, the reaching responses in both instances produce essentially identical patterns of interoceptive stimulation, the resultant affective states must be centrally, rather than peripherally, mediated.

For reasons given above it is doubtful that timing-of-reinforcement paradigms can provide decisive evidence concerning sensory feedback theories of internalization. However, curare

conditioning experiments—in which animals are skeletally immobilized during aversive conditioning or extinction—conducted by Solomon and his associates (Black, 1958; Black, Carlson, & Solomon, 1962; Solomon & Turner, 1962), shed considerable light on the issue of central or peripheral mediation of inhibitory response tendencies. The findings demonstrate that conditioned emotional responses can be readily acquired and extinguished independently of skeletal responding and its correlated proprioceptive feedback. It would appear from the overall findings of the series of curare experiments that when approach responses toward certain discriminable stimulus objects are undergoing punishment, the external stimuli also acquire the capacity to elicit conditioned emotional responses which can, in turn, control instrumental responses quite independently of

response-correlated feedback mechanisms.

The role of central processes in behavioral inhibition could be established through traditional procedures by including training conditions in which subjects merely verbalize their object choices and are punished whenever they elect disapproved items without performing any reaching responses. If children, in these conditions displayed a degree of response suppression equal to that of subjects whose motor choice responses were punished, then the findings would indicate that proprioceptive feedback does not enter into the regulatory process.

This issue can also be easily investigated by comparing the inhibitory effects of punishment when administered to the responding as opposed to the nonresponding part of the body. In an experiment reported by Kaufman (1964), adults

participated in a series of sessions that consisted of alternating periods of punished and unpunished responding. In half the punishment periods shock was delivered to the performing hand, while in the other half the nonresponding hand was shocked. At low and high intensities, variations in the locus of punishment had no differential effects, but at moderate intensities shock applied to the responding hand produced slightly more suppression. Some further evidence that response inhibition is primarily a cognitively controlled phenomenon is that under severe punishment subjects completely suppressed responding but the same responses were performed at a stable high rate during nonshock periods in the same session.

Another effective means of assessing whether response-produced cues assume controlling functions through affective conditioning is to

include observing partners in punishment paradigms. This procedure was, in fact, employed by Benton (1967). While groups of children were verbally reprimanded for either approaching or handling tabooed toys in a two-choice discrimination task, their matched partners simply observed the punished performances. In a subsequent test for transgression, the observers showed the same amount of response inhibition as the performers whose motor responding was repeatedly punished.

In Aronfreed's (1968) theory of internalization, affective states become affixed not only to proprioceptive cues but also, through backward generalization, to intentions and cognitive representations of the punished act. No empirical investigations have as yet been conducted in which verbalized intentions alone are punished. However, there is some evidence, which is



reviewed in Chapter 8, demonstrating that punishment of imaginal representations of deviant sexual activities is associated with a reduction in the corresponding behavior. Aronfreed has shown that if during punishment children are informed that selection of the forbidden attractive toys is disapproved because their functions are difficult to describe and they are therefore only appropriate for older children, subjects are later less inclined to violate the prohibition. It is difficult to evaluate without additional assessments whether such instructions facilitate compliant behavior because they “inject a cognitive structure” or for other reasons. One might expect, for example, punishments that are arbitrarily administered to generate more resentment and oppositional behavior than when the basis for the negative sanctions is considerably explained (Pastore, 1952). Under

conditions where the basis for punishment is prominently conveyed by the physical attributes of the forbidden objects, the role of cognitive functions is considerably reduced. On the other hand, when the factors determining whether given performances will incur punishment are complex and not easily distinguishable, statement of the contingency rules governing punishment would be expected to facilitate self-regulation of responsiveness.

In evaluating the role of cognitive processes in behavioral control it is essential to distinguish between the effects of cognitive representation of responses themselves and symbolically generated anticipatory consequences. In theories assuming that emotion-arousing properties are directly conditioned to responses, the initiation of negatively valenced behavior or its cognitive equivalents is presumed automatically to evoke

negative affects that actuate response inhibition. An alternative conceptualization of the control mechanisms is that performances are internally regulated not by emotions directly affixed to the behavior but rather by anticipated aversive consequences. Given different expected outcomes, the same behavior may be inhibited or freely expressed, which could not occur if emotional arousal were directly response-cued.

Several studies that have been conducted within the framework of dissonance theory also raise an issue that is relevant to aversive control. It is assumed in this formulation that if a person is provided with insufficient justification for his behavior, the resultant inconsistent cognitions generate an aversive state that can be reduced by, among other means, devaluating the activity. When an individual refrains from transgressing because of a severe threat, he presumably has

adequate excuse for his compliant behavior and, therefore, continues to value the tabooed activities highly. On the other hand, if he displays response inhibition following a mild threat, he may, to eliminate disturbing dissonance created by the incongruous behavior, convince himself that the desired objects are less worthwhile.

Aronson & Carlsmith (1963) tested the above notion by having children rate their second-ranked toy after each of three interventions. In the phase involving mild threat the experimenter informed children that he would be annoyed if they played with the forbidden toy; in the strong threat condition children were told that if they played with the toy the experimenter would be very angry and that he would take all his toys, never to return again; while in the control phase, the experimenter simply removed the crucial toy to determine whether its value may be enhanced

by being singled out for attention. Both threats produced complete behavioral compliance in all children, suggesting that the presence of other attractive toys, including the unprohibited most preferred item, greatly weakened instigation to transgression. With respect to toy preferences, following mild threat 36 percent of the children decreased their liking for the forbidden toy, whereas none of the children decreased their rating of the tabooed object following severe threat or physical removal of the items. Although threats varying in severity affected preference ratings, it remains to be demonstrated whether one could produce negative valuations of desired activities by threats alone, regardless of their severity.

Punishment is usually applied with the intent of creating behavioral controls that will endure in appropriate situations even when punishing

agents may no longer be present. Preference changes alone are therefore of limited significance unless it is also demonstrated that such changes influence subsequent self-controlling behavior. In a well-designed experiment by Freedman (1965) groups of children were threatened with either mild or severe punishment for touching an attractive but forbidden toy. Half the subjects in each treatment were provided with a brief period free of surveillance during which they could transgress without risk of punishment, whereas the prohibiting experimenter remained in the room with the other half of the subjects. Virtually none of the children in any of the groups violated the prohibition. Immediately after the session they re-rated their liking for the different toys and, approximately a month later, they were given an opportunity under permissive conditions to play with the forbidden object. Transgressive behavior

was lowest among children who received the mild threat and refrained from deviating in the absence of social surveillance. Children who were threatened with severe punishment and complied in the absence of the experimenter were more inclined to handle the previously forbidden toy and did not differ in this respect from subjects in the condition combining low threat and social surveillance. The results are somewhat difficult to explain in terms of dissonance reduction because, contrary to expectation and the findings of Aronson & Carlsmith, the forbidden toy was not devalued any more under mild sanctions than under threats of severe punishment. The author interprets the discrepant findings as indicating that subjects did not select devaluation of the forbidden object as the principal means of dissonance reduction in this particular experiment. This explanation may have some

validity, but it raises questions as to whether the hypothesized dissonance processes could ever be refuted empirically.

Results of the preceding study differ from a large body of evidence based on experiments with animals (Azrin & Holz, 1966; Church, 1963), children (Parke & Walters, 1967), and adults (Powell & Azrin, 1968; Rotenberg, 1959) demonstrating that the degree of response reduction is an increasing function of the intensity of punishment. Mild punishment generally produces little change in positively reinforced performances; at intermediate levels aversive consequences have partially suppressive effects; while intense punishment typically results in large and stable reductions in behavior.

The conflicting evidence may be interpreted in several ways. In the above experiments, punishing



consequences were actually administered contingent upon occurrence of transgressive behavior, whereas the dissonance studies involved a single verbal threat of punishment. A second and more critical difference concerns the type of behavior that is being controlled. In the dissonance paradigm approach responses are inhibited toward one of several positive alternatives. Under these advantageous conditions the instigation to transgression is apparently so weak that a mild verbal threat is sufficient to produce compliance in all subjects regardless of whether the prohibiting agent is present or absent. Given a response tendency of any strength, transgressive behavior is ordinarily performed more frequently in situations free of social surveillance than when the disapproving agent is physically present (Hicks, 1968). By contrast, in studies of aversive control investigators either

select responses that are highly resistant to change, or the behavior to be eliminated is increased in strength and concurrently maintained on a favorable schedule of positive reinforcement. It is precisely under these types of circumstances that the punishment is employed in everyday life. In applications of aversive procedures one would employ the minimum negative sanctions needed to achieve adequate behavioral control. Thereafter, control is usually maintained by occasional negative consequences in weaker and largely symbolic forms.

#### *POTENTIAL PROBLEMS ARISING FROM AVERSIVE CONTROL*

Because of the varied and complex effects of punishment, aversive control, particularly when socially mediated, must be employed with care and skill in programs of behavioral change. Many of the undesirable consequences that may

accompany punishment are to some extent preventable. Some of these common by-products, and ways of minimizing them, are discussed next.

*Generalization of Conditioned Inhibition.*

Punishment is most often employed to reduce the incidence of recurrent disturbing patterns of behavior. The effects of aversive consequences, however, are not specifically confined to the responses that are negatively sanctioned. Severe punishments, particularly if applied over a long time, can result in broad generalization of suppressive effects to socially desirable patterns of behavior. Thus, for example, repeated harsh punishment of aggression may not only eventually eliminate the troublesome behavior, but stifle assertiveness as well. The extent of generalized inhibition arising from contingent punishment varies inversely with the degree of similarity of the new situations to those of the original aversive

training (Desiderato, 1964; Hoffman & Fleshier, 1961; Honig & Slivka, 1964). Large segments of behavior are therefore most likely to be adversely affected under conditions where punishment contingencies are ambiguous, or where the negative sanctions are applied to a wide range of social responses in diverse settings.

Although at first conditioned inhibition transfers broadly, if further punishment is discontinued the generalization gradient gradually narrows until eventually the subject suppresses responding only to the stimulus context in which his behavior was punished. Nevertheless, a study by Hoffman, Fleshier & Jensen (1963) suggests that some aftereffects may persist. When animals were subjected to unrelated emotional stress three years after behavioral suppression was almost completely extinguished, the animals again exhibited substantial inhibition in the presence of

the formerly aversive stimuli. These cues not only partly regained, under general emotional arousal, their previous capacity to suppress behavior, but the original conditioned stimuli retained increased potency for some time after termination of the stress condition. Evidently, punishments administered at an early period may sensitize the organism to formerly aversive stimuli so that their suppressive power is easily reinstated, at least temporarily, by stressful experiences arising from other sources.

Inappropriate or excessive generalization of inhibitions and sensitivities can be easily prevented by the use of discrimination procedures, as demonstrated by Hoffman & Fleshier (1964). During the development of conditioned suppression animals were punished for responding in the presence of a 1000 cycles per second (*cps*) tone, but response to the adjacent

900 *cps* tone was never accompanied by shock. Subsequent tests for generalization revealed that, whereas generalization tones at or above 1000 *cps* had strong suppressive effects, the discrimination training produced very little behavioral inhibition to stimuli on the lower side of the gradient (Figure 5-1). Moreover, when the animals were placed under emotional stress after inhibitions were largely extinguished, response suppression was markedly enhanced in the presence of 1000 *cps* and louder tones, but rate of responding to auditory stimuli of 900 *cps* or lower remained essentially unaffected. As depicted graphically in Figure 5-2, discrimination procedures both sharply curtailed the spread of inhibitory effects and prevented certain generalized stimuli from acquiring and retaining latent suppressive power that could subsequently be reinstated by unrelated stressful experiences.

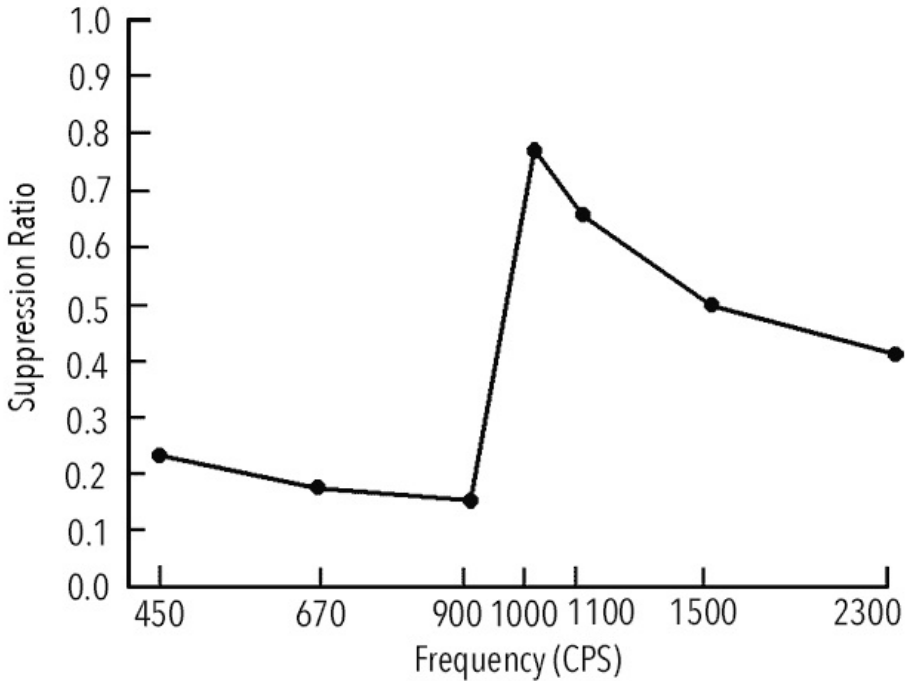


Figure 5-1. Generalization of response suppression exhibited by subjects after discrimination training during which a 1000 *cps* tone was paired with shock but a 900 *cps* tone was never accompanied by shock. A ratio of 1.0 indicates complete suppression. Plotted from data of Hoffman & Fleshier, 1964.

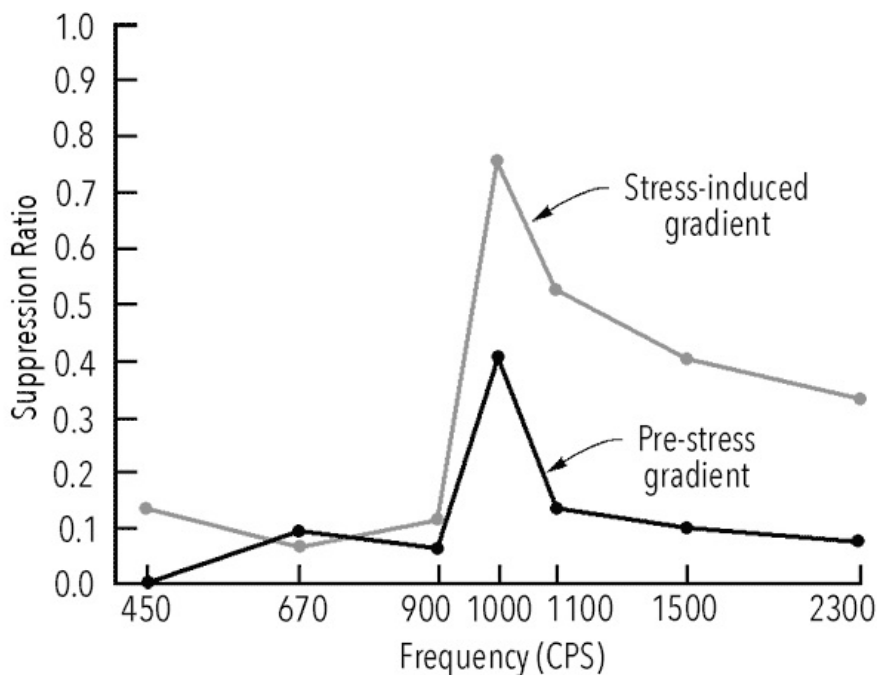


Figure 5-2. Effects of emotional stress on the generalization of response suppression produced by prior discrimination training. A ratio of 1.0 represents complete suppression. Hoffman & Fleshier, 1964.



It would follow from the above findings that a change agent who wishes to restrict the range and direction of behavioral suppression should not merely apply negative sanctions to undesirable response patterns but should also arrange different consequences for related forms of behavior in different social contexts. For instance, physically assaultive behavior may be punished but desirable assertiveness rewarded. In addition to selective reinforcement, discrimination is greatly facilitated by the use of verbal aids. By clearly labeling the modes of behavior that are permissible and those that are punishable, and by specifying the times and places at which certain courses of action are appropriate or unsuitable, greater specificity of punishment effects can be ensured.

*Emotional Conditioning.* Another possible accompaniment of aversive control, which has

been discussed at length in earlier sections, is the capacity of punishment to endow formerly neutral stimulus events with emotion-provoking properties. Any behavior that serves to avoid, remove, or postpone threatening stimuli reduces emotional distress and is thereby automatically reinforced even though the punishment contingencies may no longer be in effect. These inadvertently established fear elicitors often give rise to avoidant patterns of behavior capable of creating their own maintaining conditions. The resulting avoidant responses may be more socially undesirable than the behavior that punishment was originally intended to reduce and, once established, they may be considerably more difficult to eliminate.

As we shall see later, not all forms of punishment create conditioned emotional arousal. Fear learning is most likely to accompany

procedures based on the social presentation of painful stimuli. Negative sanctions involving chiefly the removal of positive reinforcers generally do not have fear-arousing effects. By careful choice of punishment procedures one can prevent or minimize the occurrence of undesirable emotional conditioning.

*Behavioral Inflexibility.* In many instances change agents are faced with the task of discouraging patterns of behavior that are not only permitted but expected at some later period of life. Such problems are most likely to occur when marked discontinuities exist in cultural demands, as in the case of sexual behavior. Thus, a child who has been severely punished for all expressions of sexual curiosity may be rendered anxious about sex and remain sexually inhibited in later life when such behavior is socially approved and expected of him. When marked temporal or

situational discontinuities exist, the use of social training procedures that result in rigid and inflexible behavior are contraindicated.

It is apparent from the results of an experiment by Whiting & Mowrer (1943) that, depending upon the manner in which it is employed, punishment may be most efficient in inhibiting behavior at the expense of later adaptability to changing circumstances. Using a socialization paradigm, Whiting & Mowrer employed three methods to train animals to select an effortful, circuitous route to food reward instead of a considerably easier and direct path. Whenever the easy route was chosen during training one group of animals encountered a physical barrier, the second group was denied reward, while the third group was administered an electric shock. The punished animals abandoned the short passage most rapidly but

they also persisted longest on the effortful tortuous route after the original negative sanctions were removed. Lest the reader conclude that behavioral rigidity is an unavoidable concomitant of aversive control, it should be emphasized that punishment combined with discrimination training would likewise have resulted in appropriately flexible responsiveness. If, for example, short cuts were shocked in the presence of a red light, but rewarded whenever the light was absent, the animals would undoubtedly have acquired discriminative inhibitions and reverted rapidly to the easy route after discontinuance of the socialization contingency was signalled by permanent removal of the environmental cue signifying punishment.

The transitory nature of behavioral suppression induced through punishment, frequently noted in laboratory studies, is not

surprising in view of the short periods during which punishment is typically applied. However, one finds limited but consistent evidence (Solomon, 1964) that under certain conditions even exceedingly brief punishment can result in profound autonomic disturbances and lasting inhibitions. A few shocks administered to an animal during a consummatory response may produce extremely powerful feeding inhibitions (Lichtenstein, 1950), often leading to self-starvation in the midst of plentiful food supplies (Appel, 1961; Masserman, 1943). The factors responsible for such extremely rapid and enduring inhibitory learning have not as yet been identified, but the timing of punishment appears to be an influential variable. It is not possible, from the limited data available, to determine whether the extraordinary suppressive power of well-timed punishment is primarily confined to

consummatory responses in subhuman species. One would need to exercise considerable caution in the use of aversive procedures if the latter phenomena were replicated with instrumental behavior performed by humans.

*Avoidance of Punishing Agents and Situations.*

With few exceptions, in laboratory investigations of punishment effects, animals are confined to the apparatus or their freedom of movement is otherwise physically limited so that no escape from the experimental situation is possible. Nor are the subjects at liberty to choose whether they will return to situations in which their behavior is punished, or to cut short their stay whenever they are displeased with inhospitable treatment inflicted by their hosts. In naturalistic situations, however, persons can generally avoid or restrict, to some extent, contact with punishing agents and social settings in which negative sanctions are

frequently applied (Azrin, 1958; Powell & Azrin, 1968). For this reason, even if punishment proved to be highly effective in controlling behavior, it might be of limited value under circumstances where unpleasant events could be easily avoided.

The few studies permitting escape from situations containing some aversive features reveal that subjects will repeatedly withdraw to nonpunitive situations even though the places of refuge are less rewarding (Azrin, Halse, Holz, & Hutchinson, 1965), require greater expenditure of effort for a given reward (Dardano & Sauerbrunn, 1964), or offer no positive reinforcement at all (Hearst & Sidman, 1961). Apparently withdrawal from partly aversive situations is sufficiently reinforcing to outweigh the effects of relatively unfavorable rewarding conditions brought about by escape behavior. Punishments at relatively low intensities, although ineffective in suppressing



behavior, will nevertheless drive the subject out of the situation (Azrin et al., 1965). This illustrates the limitations of aversive controls when applied in the absence of constraints or attractions to check withdrawal.

To the extent that negative sanctions foster fear and active avoidance of change agents, their opportunities to influence the behavior of others is reduced. This is a particularly serious hindrance when widespread changes in attitudes and social behavior are brought about most effectively through unforced modeling. With restricted social contact, there can be little identificatory learning. It should not be assumed from these comments that punishment invariably reduces spontaneous modeling. Risley (1968) has shown that in the case of children who are so preoccupied with bizarre, self-injurious activities that they remain oblivious to social stimuli, elimination of the hindering

behavior through punishment increases their attentiveness and responsiveness to modeling cues.

Escape tendencies can, of course, be counteracted to some degree by increasing the reward value of environments in which punishments are periodically administered, and by enhancing the positive valence of change agents. A high level of positive reinforcement may create psychological barriers against withdrawal so strong that persons will remain in situations that have punishing aspects as well. It should also be noted that punishment based upon removal of positive reinforcers, though temporarily frustrating, nevertheless tends to maintain, and may even increase, approach tendencies toward change agents.

*Negative Modeling.* In social applications of

aversive control one must also consider the modeling function of punishing behavior. In many instances modeling cues furnished by disciplinary actions are inconsistent with, and therefore contravene, the effects of direct training. If, for example, a parent punishes his child physically for having struck a playmate, the intended outcome of the punishment is that the child should refrain from hitting others. Concomitantly with the intentional training, however, the parent is unwittingly providing vivid examples of the very behavior that he is attempting to reduce in the child. From fear of retaliation, the child may not counter-aggress in his parent's presence, but he may nevertheless model his behavior after that of the parent when the child must himself cope with or control the behavior of others.

Consistent with modeling theory, Hoffman (1960) found that mothers who forced compliance

with their demands through the use of power-assertive techniques had children who exhibited aggressive power-assertiveness in controlling the behavior of their peers. Although the direction of the causal relationship cannot be unequivocally established from these data, results based on laboratory studies (Bandura, 1965) clearly demonstrate that aggressive patterns of behavior can be readily transmitted through adult modeling. In an experiment referred to earlier, Mischel & Liebert (1966) found that negative sanctions imposed on children were less effective when the agent's modeling behavior was inconsistent than when the imposed and modeled standards of behavior were congruent. These findings indicate that anyone attempting to control specific troublesome responses should avoid modeling punitive forms of behavior that may not only counteract the effects of direct

training but also increase the probability that on future occasions the individual may respond to interpersonal thwarting in an imitative manner.

### *EFFECTS OF PUNISHMENT ON CONCURRENTLY REINFORCED BEHAVIOR*

Punishment is frequently resorted to as a method of social control when the positive reinforcements maintaining troublesome behavior cannot be identified, or, if known, cannot be readily modified. It is considerably easier, though less effective, for example, to punish the antisocial behavior of delinquents than to remove the subcultural contingencies that mold and control their actions.

In most of the research reviewed earlier, punishment was applied to responses after the rewards maintaining them were removed, in order to determine whether the addition of aversive

consequences accelerated the extinction process. Of considerably greater significance are investigations of the effects of punishment on behavior that is concurrently maintained by positive reinforcement, since the response patterns that people frequently attempt to modify result in some rewarding outcomes for the performer. The available evidence generally indicates that punishment does not have enduring reductive effects on behavior that is simultaneously being maintained by a favorable schedule of positive reinforcement. Mild and moderately punishing stimuli typically reduce the occurrence of intermittently reinforced behavior, but as punishment is continued subjects adapt to the aversive consequences and exhibit some recovery of responsiveness even while the punishment contingency is still in effect (Azrin, 1959, 1960; Holz, Azrin, & Ulrich, 1963). Parents

who make frequent use of aversive controls would undoubtedly provide corroborative testimonials that, after a time, their punishments cease to have much effect on their children's behavior.

Severe punishment produces marked reduction of intermittently reinforced behavior with little or no recovery as long as responses continue to incur aversive consequences. High intensities of punishment are required, however, to maintain behavioral suppression if punishment is administered only intermittently, rewarded alternatives do not exist, the behavior is strongly established, and is concurrently supported by highly favorable conditions of reinforcement (Azrin & Holz, 1966; Boe, 1964).

#### *PUNISHMENT AND AVAILABILITY OF ALTERNATIVE MODES OF RESPONSE*

Severe punishing consequences would have to

be applied over a long period to reduce behavior effectively in persons who, because of their restricted behavioral repertoires, possess few alternative means for securing positive reinforcement. The effects of response availability on the suppressive power of punishment are clearly illustrated in a laboratory experiment conducted by Mowrer (1940), in which animals were taught two modes of adjustment to an aversive situation. One group first learned to sit on the hind legs in order to reduce the intensity of shock stimulation. After this response was acquired, conditions were altered so that the subjects could turn the shock off completely by striking a pedal. Since the latter competing response was considerably more effective it soon became strongly established. A second group of subjects learned only the pedal-pressing response. When pedal-pressing was subsequently punished



in both groups, the animals that had learned a single response continued to perform the punished behavior for the entire duration of the experiment, whereas all but one of the animals that had available two different modes of adjustment quickly reverted to the earlier pattern of behavior.

Azrin and his associates (Herman & Azrin, 1964; Holz, Azrin, & Ayllon, 1963) similarly demonstrated with adult psychotics that punishment was generally ineffective when the punished response constituted the sole means of securing positive reinforcement. On the other hand, when patients were provided an alternative means of obtaining rewards, punishment produced an immediate and complete reduction of the undesired behavior.

The above findings suggest that persons who

have few response options will be slow to abandon behavior that results in negative outcomes. This is one reason that punishment is ineffective in modifying the antisocial patterns of delinquents and adult offenders who lack alternative prosocial modes of response for acquiring possessions that they value highly. Under these conditions, punishment of antisocial behavior is likely to lead offenders either to adopt safer forms of illegitimate activities, or to alter their techniques in order to avoid detection and punishment on future occasions. An excellent example of the way in which punishment results in refinement rather than elimination of antisocial behavior is provided in the autobiography of a talented habitual offender.

My prison surroundings have been completely a life apart, something so far away that at times it was my real circumstances that seemed so fantastic. In

between I went over jobs which I had pulled off and mentally surveyed them to see how they could be improved upon. Then I went over my mistakes again, and learned how they had occurred and let me down. So you see there was always plenty for me to do when I lay on that board with no occupation but thinking. And plan future jobs. Oh yes, if a survey could be taken it would be proved that most of the big criminal jobs, and thousands of small ones, are planned in gaol. Planned to the last detail because there is not sufficient alternative interest to occupy prisoners' minds [Hill, 1955, p. 39],

To the extent that refinements in deviant behavior increase an individual's confidence that he can avoid detection and punishment on subsequent occasions the behavior will most likely be repeated.

#### *BEHAVIORAL REDUCTION THROUGH POSITIVE REINFORCEMENT OF COMPETING RESPONSES*

The laboratory findings reviewed above indicate that pre-existing modes of behavior are

likely to emerge when dominant response patterns are reduced through punishment. Stimuli that exercise some degree of control over different types of responses can also be utilized in conjunction with aversive procedures to elicit weaker response tendencies. The temporary suppression of disapproved behavior thus provides an opportunity to strengthen either emergent or actively elicited responsiveness. When the desired alternatives do not exist in the individual's behavioral repertoire, positive modeling and reinforcement procedures can be effectively employed to establish and to strengthen response patterns incompatible with the maladaptive behavior.

The results of several experiments (Boe, 1964; Holz, Azrin, & Ayllon, 1963; Whiting & Mowrer, 1943) have consistently shown that responses can be rapidly and durably eliminated when the

behavior in question is punished and competing responses are simultaneously rewarded. A treatment program relying upon a combination of aversive control of deviant responses and positive reinforcement of desired responses may be most effective for eliminating highly disturbing patterns of behavior. When differential reinforcement is applied to competing modes of behavior, the punished responses may be counteracted by either interfering responses elicited by the aversive stimuli or competing behavior maintained on the basis of positive reinforcement. Under these circumstances, long-lasting suppression is probably achieved less through inhibitory responses established by punishment than by the prepotency of rewarded alternatives. This is suggested by findings from an experiment by Timmons (1962), who compared the relative efficacy of extinction, verbal punishment, and

counterconditioning of a competing response in eliminating formerly appropriate verbal responses. Counterconditioning proved most powerful, but the addition of punishment to counterconditioning contributed little to the change process. However, this conclusion may not hold true when undesired behavior is so strongly established that few opportunities arise to reward competing tendencies. It has also been shown that even mild punishment, which has more informative than inhibitory value, may facilitate behavioral change to the same extent as severe levels of punishment, provided that alternative responses are concomitantly rewarded (Boe, 1964).

In a comprehensive analysis of punishment effects Solomon (1964) has termed the widespread belief that punishment is only a temporarily effective controller of behavior a

legend springing from tenderheartedness and sentimentalism. The findings reviewed in the preceding sections, though not entirely consistent, nevertheless provide considerable empirical documentation that under a wide variety of conditions the reductive effects of punishment tend, in fact, to be impermanent. The conclusions drawn from this large body of research cannot be readily dismissed as legendary or spurious. It is equally true that punishments administered in conjunction with other procedures may produce enduring changes in behavior (Beach, Conovitz, Steinberg, & Goldstein, 1956; Boe & Church, 1967; Storms, Boroczi, & Broen, 1963). Moreover, innumerable studies have shown that tenacious inhibitions and avoidance behaviors are created when emotional arousal is conditioned to environmental and self-generated stimuli through aversive means.

It would appear from these diverse outcomes that any sweeping judgment regarding punishment effects results in self-contradiction. One cannot contend that punishment is ineffective because it has only temporary suppressing effects and at the same time argue against its use on the grounds that it produces behavior that is unusually resistant to change. Similarly, self-contradictions arise when studies in which punishment results in self-starvation (Lichtenstein, 1950) or needless inhibition of effective means of securing reinforcement (Whiting & Mowrer, 1943) are cited as evidence of powerful aversive control of behavior, but behavioral rigidity and other undesirable by-products of punishment are treated as unsubstantiated concerns.

## **Applications of Aversive Contingency Systems**



When aversive procedures are essential for alleviating a detrimental condition, they are generally viewed by adults as an unpleasant though necessary part of the treatment, comparable to the painful routines of physical medicine, rather than as an interpersonal assault. For this reason, patients rarely develop widely generalized fears and hostile behavior toward dentists and surgeons whose ministrations initially produce highly distressing experiences. Consequently, if presented in a treatment context, aversive contingencies may have fewer adverse side effects than when they are used dictatorially to eliminate behavior that has high functional value for the performer.

When aversive control is employed to modify harmful social behavior the same punishing consequences may be strongly resented or willingly accepted depending upon the perceived

intent of the agent, and whether the sanctions are applied mainly for his own convenience or for the benefit of the recipient. Undesirable emotional effects can be substantially reduced by arranging in advance explicit contractual contingencies which clearly define the broad limits of permissible and punishable behaviors. Whenever the undesirable behavior is performed the aversive consequences should be applied immediately, consistently, and in a matter-of-fact way. If prearranged contingencies are implemented in a nonpunitive fashion, the negative sanctions will tend to be regarded by the recipient as legitimate, predictable consequences of his behavior, rather than as arbitrary and vindictive reactions.

### *SPEECH DISORDERS*

Aversive contingencies have been extensively

employed by Goldiamond (1965a) in both experimental production of stuttering behavior and its elimination. Before discussing the details of this approach and its therapeutic efficacy, some of the conditions that have been presumed to control disfluencies will be reviewed. Learning interpretations of functional speech disorders generally conceptualize stuttering as avoidance responses that are evoked by verbal stimuli in the presence of potentially threatening situational cues. The various explanatory schemes (Brutten & Shoemaker, 1967; Shames & Sherrick, 1963; Sheehan, 1958; Wischner, 1950) primarily differ in the roles they assign to conditioned emotionality and to positive and negative reinforcement processes in the regulation of disfluencies.

Innumerable assessments have been made of the personality characteristics of stutterers and

their parents, but observational studies of the naturally occurring contingencies associated with disfluencies are lacking. Based on retrospective data from families of stutterers and nonstutterers, Johnson (1942), who advocated a semantic-learning approach, considered the following conditions to be critical in the initial development of speech disorders. All young children display some repetitions of words, phrases, and syllables without any accompanying emotional arousal or self-awareness that their speech is defective (Davis, 1939, 1940). However, parents of children who later exhibit serious speech problems label normal disfluencies as stuttering, to which they then respond with increased vigilance, verbal reprimands, and anxious remedial efforts. It is assumed that, as a consequence of negative evaluations and mislabeling of natural disfluencies, anxiety reactions become

conditioned to the act of verbal communication. Formerly effortless repetitions are now accompanied by blockages, prolongations, muscular tension, respiratory changes, and compensatory facial and body movement. Once disfluencies take on aversive properties they are transformed into stuttering responses, and, like other forms of avoidance behavior, become capable of creating their own maintaining conditions.

Results of laboratory studies that will be reviewed later are not entirely consistent with the above etiological formulation. Stimuli that have been regularly associated with punishment can have disruptive effects on speech, but negative consequences made specifically contingent on disfluencies generally reduce their occurrence (Brookshire & Martin, 1967; Siegel & Martin, 1966; Quist & Martin, 1967). It would follow from

these findings that punishment might increase the frequency of disfluencies only if the disruptive effects of classically conditioned arousal outweigh the reductive effects of punishing consequences. Another important determinant of disfluencies, which is usually either ignored or assigned a secondary role in anxiety theories of stuttering, is that solicitous parental concern made contingent upon disfluencies can function as a powerful positive reinforcer for such behavior. Parents may thus inadvertently increase their children's disfluencies through their selective attention.

Familial modeling may also play an influential role, either directly or indirectly, in the development of disfluent speech patterns. Nelson (1939) compared the incidence of stutterers in filial, parental, and grandparental generations of families of 204 stutterers and of a matched group that manifested no speech disorders. Stuttering

appeared in more than one generation in only 2 percent of the nonstutterers, whereas the incidence was 51 percent in the families of stutterers. More direct evidence for the force of example is provided by Van Riper (1937), who found that stutterers not only displayed a higher rate of disfluency following exposure to a stuttering model as compared to a nonstuttering model, but they even adopted some of the idiosyncratic features of the stutterer's verbal behavior. Nelson argues for a genetic transmission on the grounds that, in some cases, the parents no longer stuttered or contact with disfluent grandparents was limited. The genetic interpretation may very well be valid, but an explanation in terms of social learning is equally tenable. Adults who themselves suffered from speech disorders at an earlier period of their life, or whose parents stuttered, would be prone to

respond with excessive concern to their children's natural disfluencies, thus increasing such behavior even in the absence of modeled stuttering.

Sheehan (1958) and Wischner (1950) provide the most detailed accounts of the negative reinforcement mechanism presumed to maintain stuttering responses. Their interpretations differ mainly on the point in the speech sequence at which reinforcement supposedly occurs. According to Wischner, anxiety elicited by specific words and situational cues results in momentary blocking of a later portion of a verbal response in an attempt to postpone or avoid anticipated social disapproval, embarrassment or other negative experiences. Stuttering behavior is believed to be reinforced by virtue of its close temporal juxtaposition with anxiety- tension reduction accompanying successful completion of the word on which difficulty was experienced. Although



stuttering generally produces negative consequences as well, Wischner assumes that the rewarding effects of immediate tension reduction outweigh the inhibitory effects of temporarily more remote punishment.

In his approach-avoidance conflict theory of stuttering, Sheehan (1958) similarly regards stuttering as an anxiety reducer, but he posits a two-stage reinforcement process. Stuttering, according to Sheehan, is a resultant of competing urges to communicate and to avoid speaking. Whenever the conflicting approach and avoidance tendencies reach a point of equilibrium, the flow of speech is interrupted or blocked. Momentary inhibition of speech reduces the fear generated by verbal communication which both reinforces blocking and, by lowering the fear-motivated avoidance gradient, releases the blocked word. In addition, tension reduction following completion

of the word reinforces the preceding stuttering responses, as well as any accompanying facial and body movements designed to help restore fluency.

Brutten & Shoemaker (1967) consider stuttering to be a phenomenon involving both emotional and instrumental conditioning processes, with the former assuming the more influential role. According to this view, disfluencies reflect the disruptive effects of emotional arousal that have become classically conditioned to certain situational and word cues through unpleasant experiences. Several studies have been published that provide some supporting evidence for the influence of classically conditioned arousal on disfluencies. Hill (1954) found that students displayed disorganization of speech in the presence of a light that had previously been paired with shock stimulation. Similar increases in disfluencies have also been

obtained during periods of emotional stress produced by arbitrary punishment (Stassi, 1961), or by exposure to stimuli that signaled the occurrence of punishing events (Savoye, 1959). While stuttering is conceptualized primarily as a form of behavioral disorganization rather than an avoidance response, it is assumed to include a secondary instrumental component. That is, stutterers adopt idiosyncratic phonatory, articulatory, and resonatory modes of expression designed to escape or forestall emotional disturbances occasioned by disfluencies. These adjustive responses, most of which take nonverbal forms, are instrumentally reinforced by subsequent word completion and attendant reduction of distress. It would follow from this explanatory scheme that stuttering can be effectively eliminated only by extinguishing the emotion-provoking properties of threatening

stimuli.

In view of the widespread belief that anxiety-reduction is the primary maintaining mechanism in functional speech disorders, it is somewhat surprising that relatively few laboratory studies have been conducted for the specific purpose of evaluating this central hypothesis. The reinforcement mechanisms adopted in the theories discussed earlier are well suited to account for unusual persistence of speech disorders. If stuttering responses produce almost instantaneous reinforcement through anxiety reduction upon their occurrence, as assumed, one would expect stuttering never to undergo extinction unless special consequences were somehow promptly interposed between the onset of blocking and completion of the word. However, a retrospective study by Sheehan & Martyn (1966) showing that approximately 80 percent of college

students who had been stutterers eventually achieved fluent speech suggests that recovery from stuttering without special intervention requires explanation just as much as does the persistence of stuttering.

In addition to the meager experimental data on the acquisition and maintenance of stuttering responses, the anxiety-reduction theories furnished no distinctive modes of treatment. An early experiment by Sheehan (1951), however, had therapeutic implications that were never pursued. In this study it was assumed that the point of reinforcement of stuttering responses is the anxiety reduction following completion of the word. Therefore, in an effort to prevent reinforcement of stuttering responses, conditions were so arranged that only fluent speech could be instrumental in terminating each word in spoken sentences. Adult stutterers read passages aloud on

different days under two conditions in counterbalanced order. Under the control conditions subjects merely read the material six times in their usual way without arrangement of any special consequences for disfluencies. In the nonreinforcement treatment, however, subjects read the passages aloud five times, except that they were required to repeat each stuttered word until they had said it fluently before proceeding to the next word. Thus, stuttering prolonged rather than terminated the attendant stress and tension. On the sixth experimental trial and on the seventh trial of both conditions subjects read the passages as they normally would. Comparison of the frequency of disfluencies between conditions and successive readings (Figure 5-3) shows that stuttering was substantially reduced and remained significantly lower when it produced negative consequences; whereas, under ordinary

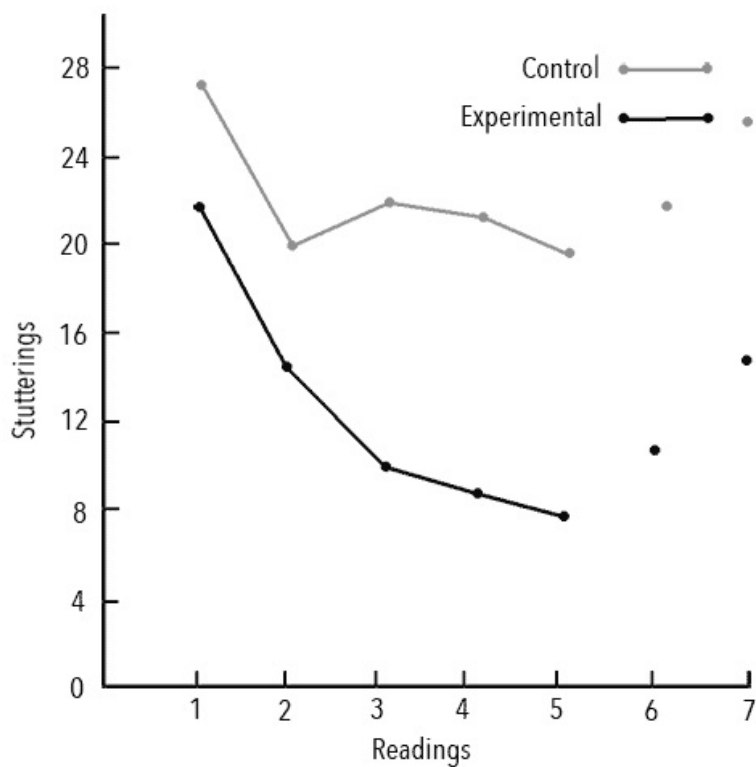


Figure 5-3. Frequency of stuttering through successive readings in experimental and control conditions. Sheehan, 1951.

conditions, stuttering rate decreased slightly, probably as a function of adaptation, but was subsequently restored to its original level. Despite the encouraging findings, the experimental procedure was never extended to test its therapeutic efficacy. Instead the author (Sheehan, 1954) advocated the same time-consuming interview approaches that have proved of limited value in altering other forms of deviant behavior.

In the preceding experiment any possible decremental reinforcement of stuttering responses occurring at the terminal point of the verbal sequence was removed. The effectiveness of reinforcement can be reduced if an interval of time and other activities intervenes between a response and its intended consequences. In Sheehan's study the temporal arrangement of events was not the most favorable one for eliminating disfluency; i.e., stuttering responses



eventually ended in word completions which, in turn, were followed by negative consequences of having to repeat the word on which the subject encountered difficulty. Hence, successful word completion was punished more strongly than temporally remote repetitions and blockages. Results of a study by Daly & Cooper (1967), however, raise doubt that stutter-contingent punishment would have achieved a greater reductive effect. These investigators compared the frequency of disfluencies under conditions where shock was administered either during the act of stuttering or immediately following completion of each stuttered word. The stutter-contingent system reduced disfluencies most, but the difference was not of statistically significant magnitude. In the method devised by Goldiamond (1965a) for modifying chronic stuttering, which will be reviewed next, each moment of disfluency

produces an immediate unpleasant consequence.

It is not entirely clear from Goldiamond's otherwise informative article what he considers to be the critical conditions for the acquisition and maintenance of stuttering responses. While acknowledging that stuttering may involve an emotional component, the anxiety-reduction theory is summarily dismissed. Instead, numerous anecdotal reports are presented to illustrate that stutterers are generally subjected to lower achievement demands, they are called on less often to perform onerous tasks, their errors are more likely to elicit sympathetic reactions from listeners, they are provided more time to formulate answers to questions, and they can effectively command polite attention through disfluency. These reports highlight both the avoidance function of stuttering responses and their value for drawing positive responses from

others.

Because of the nature of the contingencies employed, findings from an experiment designed to produce stuttering responses in a normally fluent subject (Flanagan, Goldiamond, & Azrin, 1959) are of limited value in elucidating the conditions under which stuttering is most likely acquired. In this experiment, a subject received continual shock; a verbal blockage, however, turned off the shock for 10 seconds, and each additional disfluency occurring during the interval further delayed the aversive stimulation for a fixed time. As might be expected, blockage rate increased markedly to the point where the subject almost completely averted the unpleasant stimulation by continuous disfluent speech. While this study demonstrates that it is possible to induce deviant verbal behavior, it is exceedingly improbable that parents of stutterers continuously

punish their children's fluent verbal patterns, but respond nonpunitively whenever their children block and stutter. Indeed, the findings discussed earlier indicate that the pattern of naturalistic contingencies is probably the exact opposite of the one imposed in the above study. We may grant that experiments are not designed to reproduce in every detail the stimulus events that occur in real life, but we should require experimental contingencies to bear some resemblance to social reality if their findings are to have explanatory value.

The studies previously reported suggest that disfluent speech can be influenced to varying degrees by at least three sets of controlling conditions. First, threatening stimulus events can produce speech disorganization through arousal of anticipatory emotional responses. Second, anxiety and tension reduction associated with the

completion of stuttering responses can serve to reinforce them. And third, disfluency may have some functional value in commanding attention and lessening performance demands as suggested by Goldiamond. A situational analysis of disfluencies in children by Davis (1940), in fact, disclosed that disfluent speech occurred most frequently when children either were emotionally aroused or wished to gain the attention of others.

Practically every form of psychotherapeutic approach has been applied at one time or another to speech disorders, with limited degrees of success. Goldiamond (1965a) reports uniformly favorable outcomes with stutterers by disfluency-contingent punishment which, if confirmed by more extensive assessments conducted over a longer period, would represent a notable therapeutic achievement.

In the first step of the procedure, stutterers are instructed to read aloud from printed pages for approximately 50-minute periods to provide a baseline measure of stuttering. In this initial assessment reading speed and frequency of disfluencies are recorded. During the treatment phase of the program reading rate is deliberately slowed down and negative consequences are made contingent upon the occurrence of stuttering responses. Delayed auditory feedback of the person's own voice is utilized as the stutter-produced aversive stimulus.

Pauses frequently occur as natural parts of fluent speech and, consequently, an independent observer would have to delay judgment as to whether a particular hesitancy represented a natural pause or a speech block. In order to ensure that aversive consequences are immediately contingent upon disfluencies, the client self-

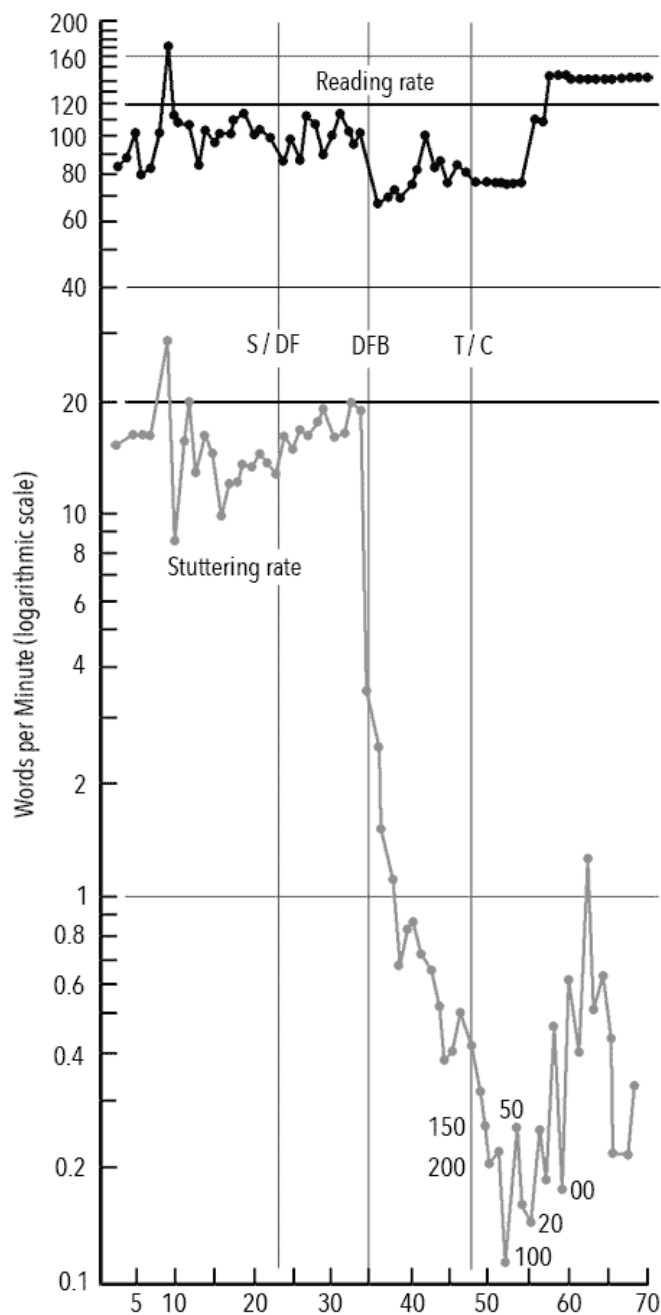
administers the negative feedback on the basis of his own response definitions. During oral reading of material presented at a low rate the client presses a microswitch for each word blocked, which immediately shunts speech to a delayed feedback device for a fixed time. This procedure eventually establishes a slow stutterless pattern of verbal behavior.

After the substitute fluent pattern is stabilized, the client's verbal behavior is progressively modified in the direction of normal speech. This is achieved by accelerating the reading rate in graduated steps through mechanical control of the material to normal or beyond baseline levels. At the same time, delayed feedback is also gradually faded out. For example, the delay period may be reduced from an initial 250 millisecond duration to 200, 150, 100, 50 milliseconds, and finally eliminated completely.

A summary of the procedures and concomitant changes in verbal fluency achieved with the first subject to receive this form of treatment is presented in Figure 5-4. During the baseline period, which extended over the first 21 days, the subject read approximately 110 words per minute and stuttered on about 15 words per minute. In sessions 22 through 33, he engaged in self-definition of stuttering without any response-contingent consequences. Beginning with the 34th session, reading rate was lowered and stutter-produced delayed feedback was introduced. At session 47, time control of reading rate was instituted, and several sessions later delayed feedback was gradually faded out on successive days. As shown in the figure, during the terminal phase of the experiment the subject was reading approximately 140 words per minute, well above his previous baseline, while stuttering responses,



Figure 5-4. Reduction in stuttering rate and establishment of fluent reading in a chronic stutterer. Goldiamond, 1965a.

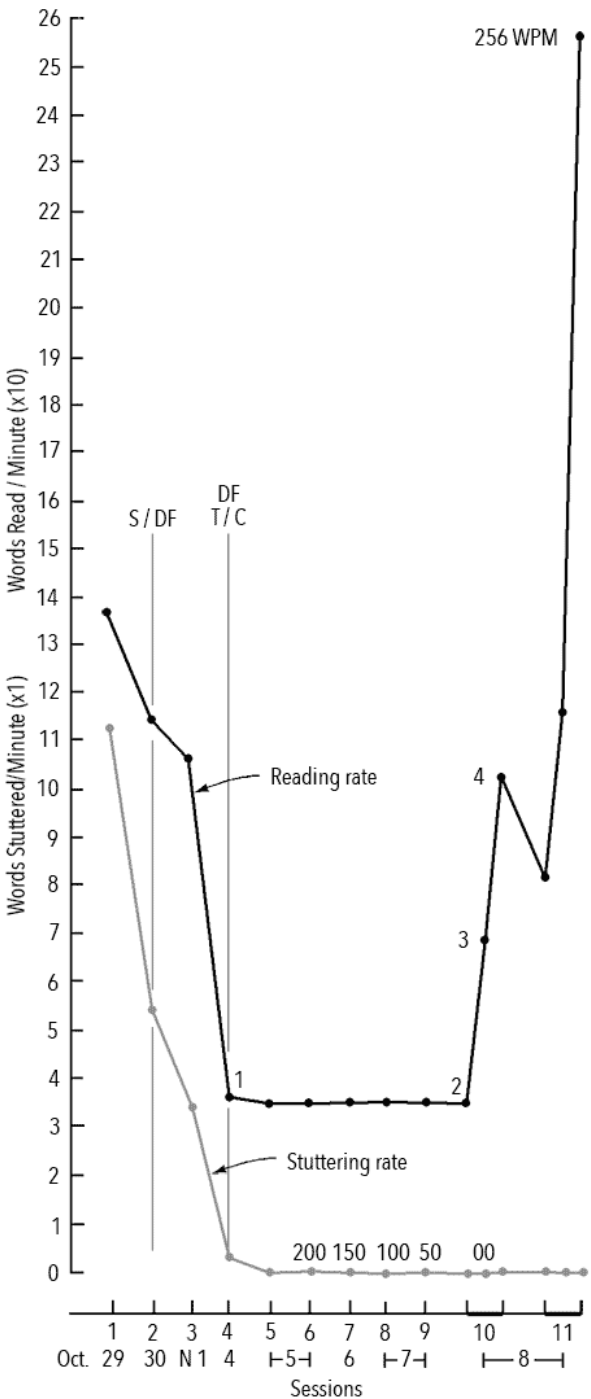


which ranged between 0.2 and 0.6 words per minute, were almost completely eliminated.

Goldiamond reports even more dramatic changes in verbal fluency (Figure 5-5) in a second stutterer who, because of time limitations, participated in a highly condensed version of the standard procedure. Stutter-produced delayed feedback combined with slow presentation of reading material was introduced after three sessions; shortly thereafter reading rate was raised in successive stages, and the aversive contingency was gradually removed. By the eighth and final day the client was reading 256 words per minute without manifesting a single disfluency.

Quantitative data are presented for eight chronic stutterers. In each case fluent speech was achieved and maintained in the laboratory situation even when rate of verbalization was

Figure 5-5. Elimination of disfluencies through stutter-produced delayed feedback and development of rapid fluent reading. Goldiamond, 1965a.



increased and negative consequences withdrawn. Goldiamond also reports concomitant improvements in clients' speech in naturalistic settings, but apparently no objective assessments were conducted. According to a later research report (Goldiamond, 1965b), fluent patterns of rapid reading, which endure under laboratory conditions, have been established in 30 stutterers within a remarkably short time. These preliminary findings indicate that the procedures devised by Goldiamond may have considerable promise. However, evaluation of their therapeutic efficacy must be deferred until more stringent tests are carried out, and long-term follow-up results are furnished.

Reports of changes in stuttering behavior must be accepted with caution in view of evidence that disfluency varies considerably as a function of the social characteristics and the communicative

demands of different situations. A review of the relevant literature by Bloodstein (1949) reveals that stuttering responses are greatly diminished under conditions of reduced requirements for interpersonal communication. For example, stutterers can generally sing and count fluently, they can speak smoothly when acting, when imitating another person's verbal style, or when alone. For this reason attainment of rapid stutterless reading by a person alone in a booth does not constitute a powerful test. Disfluency is likewise decreased in situations where negative social reactions from listeners are minimized. Thus stutterers may experience little verbal difficulty when speaking to persons much younger than themselves, to audiences regarded as socially or intellectually inferior, or to persons over whom they exercise authority. These findings suggest that stringent tests of fluency would require social

communication rather than oral reading in evaluative situations involving intimidating audiences. Tape recordings of speech under these types of conditions can be obtained without difficulty.

When behavior is modified in clinic offices or laboratories the problem of insufficient transfer of changes to everyday situations frequently arises. Goldiamond has attempted to overcome this difficulty in the elimination of stuttering by utilizing additional procedures specifically designed to aid generalization of fluent speech to the natural social environment. Speech exercises are prescribed for the client to perform at home. Essentially these involve reading for brief periods in the slow stutterless manner developed in the laboratory, interspersed with rapid oral reading.

The method devised by Goldiamond follows an

exclusively operant approach. If all stutterers who receive this form of treatment are able to converse fluently, even under stressful social conditions, then obviously no additional procedures are required. On the other hand, if their speech performance is substantially improved but they continue to exhibit some disfluencies in certain emotion-arousing situations they could benefit from a program of desensitization. Some case data have been published to suggest that disfluencies controlled by conditioned aversive stimuli can be successfully eliminated by extinguishing emotional responsiveness to such threats.

An illustrative case is provided by Walton & Mather (1963) in the treatment of a 40-year-old architect who suffered from an articulatory disorder characterized by speech blocks associated with teeth grinding. The controlling stimuli for the client's disfluencies included

situations in which he was required to convey specific information, particularly in the presence of strangers, supervisors, and persons whom he wished to impress. Initially a “speech shadowing” technique was employed in which the therapist read passages from a book and the client matched his verbalizations without seeing the text. Although this method proved highly effective in producing fluent speech in the treatment situation, the stammering nevertheless persisted in natural contexts. The second treatment strategy was aimed directly at neutralizing the stimulus determinants of the speech blocks. At the completion of a desensitization treatment, in which stammer-generating situations were repeatedly paired with relaxation, the client was able to converse fluently, even when communicating specific information to persons in authority. Because of the multiple determination



of disfluencies, a treatment strategy combining reinforcement procedures that restore fluent speech with methods that can extinguish the arousal potential of stutter-eliciting stimuli would prove most effective in eliminating disfluencies under stressful social circumstances.

### *CONTROL OF SELF-INJURIOUS BEHAVIOR*

One of the most perplexing and dangerous disorders, which is especially prevalent among schizophrenic children, involves self-injurious behavior. In its more extreme forms, children pummel their faces repeatedly, they bang their heads forcibly against hard or sharp objects, they tear and bite off pieces of flesh from their bodies, or they exhibit some other type of self-mutilating behavior. Because of the serious risk of permanent physical injury, such children are usually kept continuously in physical restraints.

The maintaining conditions of self-injurious behavior are not fully understood, but several experiments have shown that it is amenable to control through variation of reinforcing consequences. Lovaas, Freitag, Gold, & Kassorla (1965) found that the self-injurious responses are readily cued off by stimuli signifying withdrawal of social reinforcement for other behaviors and that they tend to increase in frequency and intensity when social reactions are made contingent upon their occurrence. Demonstrations that self-injurious behavior can be reduced through reinforcement of physically incompatible responses and increased by extinction of competing activities cast little light on the variables that control this behavior. Of much greater interest are the changes produced by variation of the contingencies applied directly to self-injurious behavior.

It has been demonstrated (Bucher & Lovaas, 1968; Lovaas, et al., 1965) that physical affection, and sympathetic and reassuring comments made to children whenever they engage in self-injurious behavior, leads them to respond even more self-destructively, whereas such behavior is promptly reduced to its original baseline level when positive reactions are discontinued. These findings suggest that self-injurious behavior may be partly maintained by its social consequences, though the evidence is conflicting on this point. Subtle changes in social reinforcement, such as an experimenter remaining with a child without attending to him, does not seem to affect the rate of self-injurious responses (Lovaas et al., 1965; Risley, 1968). More complete withdrawal of social interaction for a brief period whenever children behave self-injuriously reduces such activities, but occasionally they are unaffected even by these

more powerful consequences (Risley, 1968). Whatever the controlling variables might be in any given case, preliminary findings indicate that chronic and intractable self-injurious behavior can be successfully eliminated with beneficial effects by brief application of an aversive contingency.

Punishment is generally used as an adjunct to either extinction procedures or differential reinforcement of competing response patterns. Brief social withdrawal made contingent on self-destructive behavior is usually sufficient for its permanent removal (Hamilton, Stephens, & Allen, 1967; Lovaas et al., 1965; Wolf, Risley, & Mees, 1964). In some cases, however, when self-mutilating behavior is first placed on extinction it may temporarily increase in intensity, which could be potentially dangerous. These responses can be promptly and completely eliminated by contingent application of a few painful shocks. In one of

several cases reported by Bucher & Lovaas (1968) a seven-year-old schizophrenic boy who had been self-injurious since the age of two performed approximately 3,000 self-pummelling responses during a period of 90 minutes when his physical restraints were removed. This behavior was almost totally eliminated in four sessions by the use of 12 contingent shocks. Self-destructive behavior that had persisted over a period of six years was also rapidly and durably removed in a schizophrenic girl after she received a total of 15 shocks for beating her head (Figure 5-6). In each case reported, contingent aversive consequences not only removed self-mutilating behavior, but the children whined less and they were much more inclined to attend to the therapists.

Tate & Baroff (1966) similarly achieved quick control over chronic self-injurious behavior in a partially blind psychotic boy through punishment

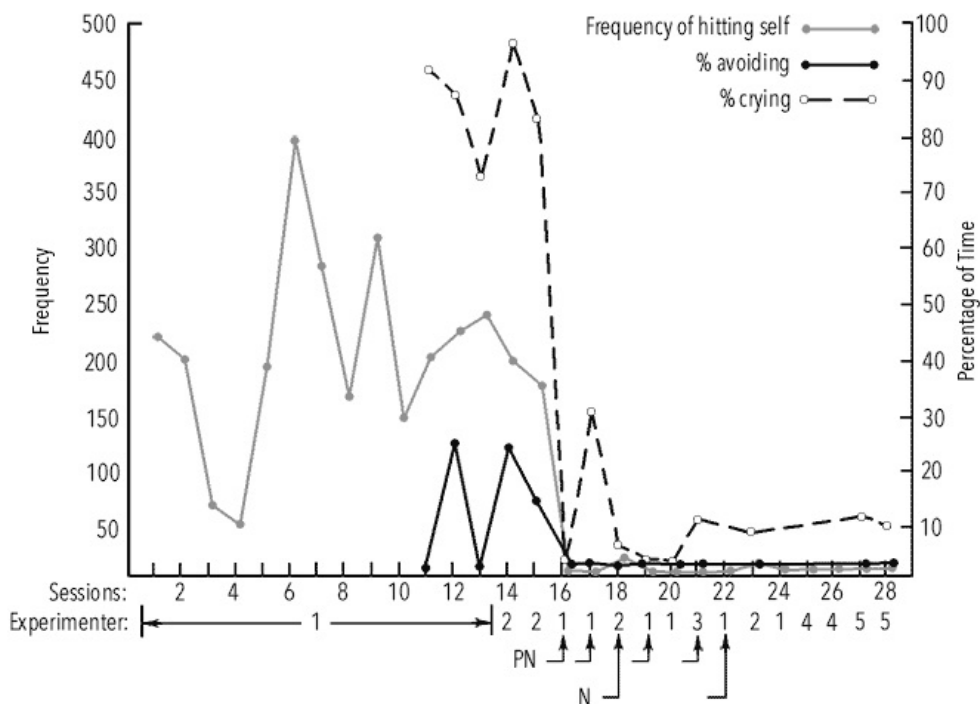


Figure 5-6. Frequency of self-injurious behavior and amount of avoidance and crying displayed by an autistic child during pre-treatment sessions (1 through 15), and when such behavior was punished by shock (P) or a verbal reprimand "no" (N) during sessions 16, 17, 19, and 21. The numerals below the session numbers identify the therapist present during the session. Bucher & Lovaas, 1968.

procedures. The behavior, which he had exhibited continuously for five years, included vigorous head-banging, face-slapping, and self-kicking. Because physical contact with people was highly reinforcing to the boy it was employed as the consequent event in the first phase of the treatment program. A series of daily walks was arranged in each of which the therapist removed his hand from the child's grasp and ceased talking whenever a self-injurious response occurred; physical contact was reinstated if the boy did not hit himself for a period of three seconds. As can be seen in Figure 5-7, the time-out contingency produced a dramatic reduction in self-injurious behavior.

In the second phase of the program, response-contingent shock was used to eliminate the remaining head-banging that threatened further damage to his eyes. It was explained to him that if

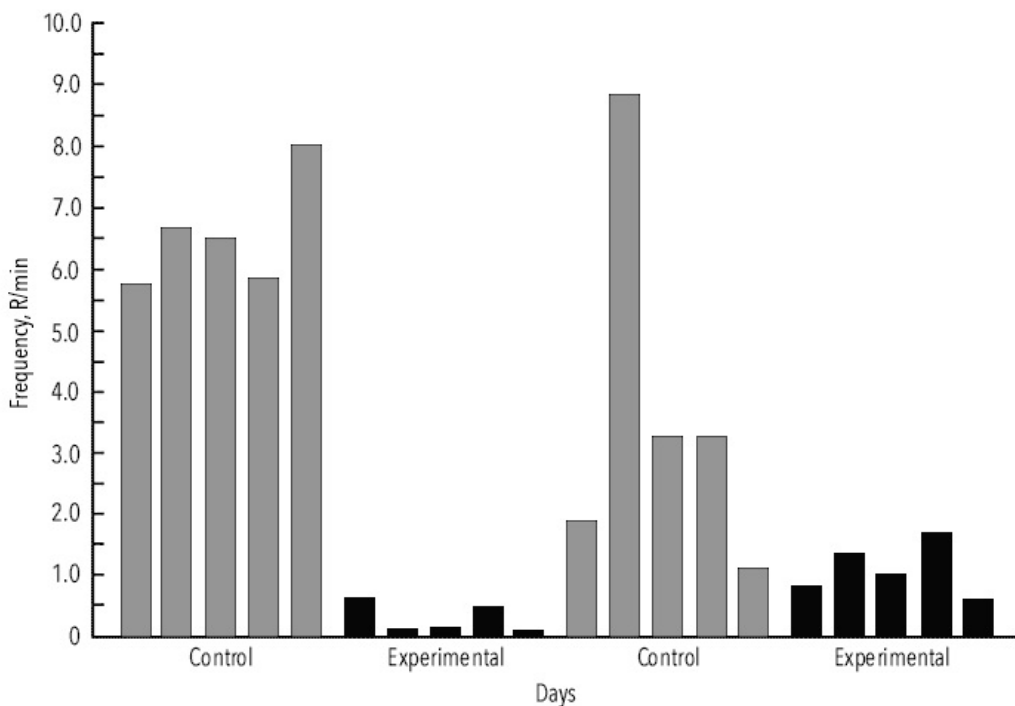


Figure 5-7. Daily average frequency of self-injurious responses performed per minute on control days when such responses were followed by no special consequences, and on experimental days when self-striking behavior produced brief withdrawal of physical contact. Tate & Baroff, 1966.



he continued to hit himself he would receive painful shocks. The aversive contingency, combined with verbal praise and affectionate reactions for desirable behavior, permanently eliminated the self-injurious responding. Whereas previously the boy had been physically restrained in bed, after the treatment program was completed he participated freely in daily activities with increased enjoyment and spontaneity.

Risley (1968) provides a detailed report of a case in which social consequences were totally ineffective in decreasing self-injurious behavior. It involved a markedly deviant 6-year-old girl who suffered many serious body and facial injuries from hazardous climbing activities which she engaged in continuously. A program of differential reinforcement, wherein climbing behavior was ignored and incompatible responses were rewarded, failed to produce any significant

changes. Unlike the cases cited above, brief physical isolation contingent upon dangerous climbing behavior also proved ineffectual. After these other methods failed, shock punishment was applied in conjunction with a verbal reprimand. Administration of several shocks, and later verbal reprimands alone, completely eliminated inappropriate climbing when the experimenter was present, but there was no noticeable decrease in this behavior at home. When the mother subsequently applied contingent shock at home, perilous clambering promptly declined from an average rate of 29 to 2 per day within a few days. Thereafter, the behavior was successfully controlled by having the child sit in a chair for a brief period after each instance of climbing.

It is noteworthy that surprisingly brief programs of contingent shock and reinforcement withdrawal are not only effective in removing self-

injurious behavior of long standing, but they generally improve social functioning as well. These related changes are most clearly revealed in the findings reported by Risley (1968). After disruptive self-injurious behavior is removed, children become more attentive, socially responsive, and display increased imitateness, thus enabling them to acquire new patterns of behavior. If further studies support this conclusion, there is no justification for having children mutilating themselves or spending their early years uselessly in physical restraints.

### *MOTOR DYSFUNCTIONS*

In one of the early applications of aversive contingencies, Liversedge & Sylvester (1955; Sylvester & Liversedge, 1960) treated 39 cases of writer's cramp with a procedure employing response-contingent shock. In the majority of

cases, tremors and spasms of hand muscles were elicited only by highly specific writing stimuli, but the same muscle groups were unaffected when involved in nonwriting situations. As has been found in other types of deviant behavior, the individuals exhibiting this occupational impairment shared no common psychological characteristics, suggesting that specific reinforcement contingencies rather than psychodynamic factors were the critical determinants. It is therefore not surprising that a number of these clients who had undergone various conventional forms of psychotherapy experienced little or no amelioration of their "craft neurosis." Consequently, Liversedge & Sylvester explored the efficacy of aversive consequences for altering each component of the physical disorder.

In order to remove tremors, one element of the motor disability, the clients were required to

insert a stylus into a series of progressively smaller holes; each time the stylus made contact with the side of the hole it resulted in a shock. The removal of the spasm component of the disorder was obtained in two ways: First, the clients traced various line patterns (similar to the movements required in writing) on a metal plate with a stylus, and any deviation from the path produced a shock. Following training on the apparatus, they then wrote with an electrified pen which delivered a shock whenever excessive thumb pressure was applied. In treating typists' cramp a small electrified pad was attached to the palm of the hand so that whenever the fingers contracted into the palm a shock was delivered.

The authors report that after 3 to 6 weeks' training, writing of satisfactory quality was restored in 24 of the cases; the clients were able to resume work, which often involved writing for

extended periods, and follow-up studies conducted up to four and a half years later disclosed that the improvement was being maintained. Five clients responded favorably to the treatment but subsequently experienced a recurrence of muscular dysfunction, while 10 cases showed no improvement. The failures had exhibited the motor disability over a longer period (6 to 21 years), which may partly explain why they were less responsive to the treatment.

The procedures devised by Liversedge & Sylvester are sufficiently effective to merit controlled studies to isolate factors responsible for the success of this treatment approach. Since the technique involves both response guidance and punishment of spasmodic and tremorous responses, it is conceivable that guided retraining with nonaversive feedback may in itself effect changes. In addition, information is needed

regarding the types of individuals who achieve lasting benefit from application of aversive contingencies alone, those who require supplementary or alternative forms of treatment, and the cases for whom aversive procedures are contraindicated.

It would appear, from the findings of Liversedge & Sylvester, that aversive contingencies are most successful in modifying motor dysfunctions controlled directly by stimuli in writing situations that do not have strong emotion-provoking value. On the other hand, in instances where muscular tremors and tension reflect the disruptive effects of high emotional arousal, punishment may further augment the negative valence of writing situations and thereby exacerbate the condition. In this connection, Beech (1960) has furnished some preliminary experimental evidence that extinction and

desensitization methods may prove successful with highly anxious individuals whose writing disturbances are unimproved by contingent negative consequences.

In one case, for example, the person had received a full year of psychoanalysis, a year of hypnotherapy, and 10 sessions of aversive conditioning without any amelioration of a writer's cramp of five years' duration. Whenever he grasped a pen the index finger would contract and the wrist would bend sharply, causing severe pain, fatigue, and immobilization of the hand. The client participated in seven extinction sessions, each of which consisted of massed evocation of effortful finger contraction, to the point at which he could no longer retract the finger. Writing tests administered following each extinction period disclosed not only a rapid and progressive decline in the incidence of finger contraction, but also a



similar decremental change in the untreated arm spasm. Moreover, on the day after the final experimental session the client was able to write 24 lines with only one instance of hand spasm.

Similar, though less stable, results were obtained by extinction involving repeated response evocation with a second client, both of whose hands were severely immobilized. Attempts at writing produced intense painful muscular contractions and, at best, illegible scribbling; his left hand, which he had previously used in typing, was clenched tightly into a fist which he could open for only a few seconds at a time. In an attempt to extinguish fist-clenching the client repeatedly performed effortful hand-closure responses on a dynamometer until he could no longer squeeze the handle of the apparatus. After 33 extinction sessions he was able to open his hand for an indefinite period; however, thoughts

about his work, and stressful interpersonal experiences, typically reinstated the motor disorder. Since writing situations elicited considerable anxiety in the client, the tremors and spasms associated with the act of writing were treated by the standard desensitization procedure, in which imagined writing activities were progressively performed in the context of relaxation. Tremorless writing of satisfactory quality was temporarily restored in this manner, only to be followed by repeated relapses.

In the above case the motor dysfunction was apparently controlled, in large part, by distressing vocational and interpersonal events. Had emotional arousal to the latter situations also been neutralized, it is possible that more enduring changes would have been achieved. This type of approach was successfully utilized with a foreign student who was unable to take lecture notes due

to marked hand tremors and attendant fatigue. After participating in a brief desensitization program in which imagined and actual writing situations were presented in conjunction with relaxation, the student was able to write in a rapid and relaxed manner without manifesting any muscular disturbances. Announcement of a final examination, however, re-established the tremorous responses, though in less marked form. A second series of desensitization sessions, directed toward examination situations, effectively eliminated the student's writing disability.

The case studies reported by Beech were primarily designed to demonstrate that writing disorders which apparently are under aversive stimulus control and may therefore be exacerbated by punishment can be modified under laboratory conditions by other methods. While

these findings have suggestive value, more extended applications and assessments of these procedures are necessary to establish their utility for eliminating occupational motor disorders.

A study by Barrett (1962) provides a laboratory demonstration of reduction in tics by the use of automatically programmed response consequences. The client, a 38-year-old accountant, suffered from extensive multiple tics that proved refractory to psychotherapeutic and pharmacological treatments. According to the client's report, the tics developed after a frightening experience in the army when he awoke one night with a choking sensation accompanied by a momentary inability to breathe or swallow. At the time of the study, his motor pattern included contractions of neck, shoulder, chest, and abdominal muscles, head-nodding, eye-blinking, mouth-opening, other facial movements, and

swallowing difficulties.

During the experimental sessions, the tiqueur was seated comfortably in an armchair designed so that spasmodic movements produced by the tic were automatically recorded, and activated the contingency controller. The contingency arrangement was programmed so that each tic produced either a brief interruption of music, or white noise. Music was chosen as the positive stimulus since the client was a part-time musician and the interruption of recorded jazz concerts that he had personally selected could serve as an adequate negative event. The effects of the withdrawal of music and the presentation of noise were compared with the client's deliberate efforts to control his tics. Results based on eight sessions showed that, while the rate of tics could be reduced somewhat by self- control, tic-produced white noise, and contingent music, the most

dramatic and stable decrements resulted from tic-produced interruption of music. The latter procedure reduced the rate of tics from 55 to 85 percent below the baseline level during the various sessions, but the question remains whether continuance of the mild punishment contingency for a longer period could eventually eliminate or markedly reduce the occurrence of tics in naturalistic settings when negative feedback is absent. The author suggests that in therapeutic applications of this method, the client might be able to modify motor and other disturbances under his own direction if he were furnished with a portable contingency controller to plug into a home radio, television, or record player. The intricate apparatus could be dispensed with, however, if comparative studies disclosed that a simple extinction procedure involving repeated nonreinforced evocation of tics was

equally or more effective than methods utilizing response-contingent punishment.

### *SEXUAL DEVIATIONS*

Chapter 8 describes classical conditioning procedures designed to eliminate sexual aberrations by endowing stimuli that elicit the behavior with aversive properties. Some attempts have been made to bring sexually deviant behavior under control through response-contingent aversive stimulation. Feldman & MacCulloch (1964, 1965) provide a detailed account of a treatment method, primarily based on an avoidance conditioning paradigm, that they have developed for the modification of homosexuality.

Clients are asked initially to rate the attractiveness of an extensive series of slides depicting both clothed and completely nude males. A similar hierarchy of slides of females varying in

attractiveness is prepared. In order to facilitate transfer effects, whenever possible photographs of males and females with whom the client is closely acquainted are used.

In the avoidance conditioning procedure, a picture of a male is presented on a screen in a darkened room and the client is instructed to leave the picture on the screen as long as he finds it sexually attractive. The client is informed that he might be administered shocks during the viewing periods, but that he can depress a switch that simultaneously terminates the picture and the aversive stimulation. If he turns off the slide within 8 seconds, shock is avoided; if, on the other hand, he continues to view the picture beyond the designated period he is administered an unpleasant shock through electrodes attached to his leg.



On the assumption that variable training procedures will produce avoidance responses that are highly resistant to extinction, the occurrence of negative consequences is varied randomly with respect to their frequency and timing. Unpredictable aversive contingencies can produce stable rates of avoidance responses in the treatment situation, but it is questionable whether they will have much effect on extinction in everyday situations. The reason for this, which will be explained more fully later, is that clients can easily recognize that the arbitrary punishment contingency employed in treatment is completely absent in extratherapeutic situations. Under conditions where the schedules of reinforcement in different situations are highly distinguishable, the partial reinforcement effect would not be expected to carry over to the new context. In any event, during the treatment series, one-third of the

client's avoidance responses to pictures of males are reinforced by shock termination; on one-third of the trials aversive stimuli are administered even though the client performs appropriate avoidance responses within the allotted time; and on the remaining trials termination of the picture is delayed for varying periods of time after the avoidance response has been performed.

In addition to establishing avoidance responses toward males, an effort is made to condition anxiety relief properties to females by introducing slides of females contiguously with the removal of pictures of males. To further increase approach tendencies toward females, the client can request return of a slide of a female after it has been removed and thus postpone aversive experiences periodically associated with male pictorial stimuli. The presentation and removal of the slides of females is controlled by the therapist

in order to prevent any inadvertent reinforcement of avoidant behavior toward females.

Initially, the slide of the least attractive male is paired with that of the most fetching female. A particular male slide is displayed repeatedly until the client reports indifference or a dislike for it, and, in addition, turns off the slide within a second or two; the next feminine picture is introduced when the client consistently requests the return of the preceding feminine item. This same process is repeated with succeeding pairs of stimuli in the pictorial hierarchy. A typical session involves completion of about 30 trials and requires some 20 minutes to conduct. The treatment series, which averages about 15 sessions, is continued until a client exhibits a clear change of sexual orientation. In addition, the client returns for about 8 or 10 “booster” sessions during the year following completion of the program.

Feldman & MacCulloch (1965) present preliminary outcome data for 19 unselected chronic homosexuals treated by this method. Three cases discontinued therapy; 10 out of 12 clients under 40 years of age, and 1 out of 4 cases over 40, achieved marked changes in their sexual orientations. According to the authors, the clients' interests in men have greatly diminished and homosexual practices have been virtually eliminated, whereas heterosexual interests, fantasies, and behavior have been substantially increased. Moreover, in all but one case the increased heterosexual behavior noted immediately after treatment has been either maintained or augmented during follow-up periods ranging from 2 to 14 months.

MacCulloch, Feldman, & Pinshoff (1965) also recorded response latencies and physiological concomitants of avoidance conditioning for a small

subsample of cases to determine if response measures obtained during treatment have value in predicting post-therapy sexual behavior. Clients who achieved and maintained a heterosexual orientation displayed progressively shorter avoidance response latencies to homoerotic stimuli; they showed strong approach responses to feminine photographs as therapy progressed, and they exhibited conditioned autonomic responses to pictures of males. In contrast, those who reverted to homosexual practices exhibited considerable irregularity in response latencies, weak approach tendencies toward feminine stimuli, and little or no autonomic conditioning. These results, while most interesting, and consistent with the correlates that one would expect for successful avoidance learning, must be confirmed on a larger sample before their predictive value can be adequately evaluated.

Feldman & MacCulloch attribute the therapeutic outcomes primarily to the avoidant component of the treatment procedure. The behavioral changes also reflect the effects of classically conditioned aversion to male stimuli and stress-reducing value to feminine cues. The highly favorable outcomes reported by Feldman and MacCulloch are particularly striking when one considers that there was no biased selection of cases, and that supplemental programs designed to develop adequate heterosexual repertoires of behavior were rarely employed.

Bond & Evans (1967) successfully eliminated underwear fetishism by contingent application of aversive consequences in two boys who repeatedly raided clotheslines for women's undergarments. The boys were presented in random order 20 fetishistic and 20 neutral objects and intermittently shocked while removing the

fetishistic items. The authors report that after several sessions the boys lost their interest in female underwear and permanently discontinued their clothesline forays. The methods employed in the above studies appear to hold some promise for modifying deviant sexual behavior, but full evaluation must await controlled studies.

### **Removal of Positive Reinforcers**

Aversive consequences in the form of physical punishment are seldom employed as methods for controlling behavior in naturalistic situations. Removal of positive reinforcers, on the other hand, is a very common mode of aversive control (Bandura & Walters, 1959; Sears, Maccoby, & Levin, 1957). This method is exemplified by negative sanctions in which persons are deprived for a time of rewards and privileges that are ordinarily available, such as use of television,

automobiles, or certain facilities; they are temporarily removed from rewarding situations; they are restricted from going out or participating in enjoyable activities; or they are temporarily forced to relinquish other objects and pastimes they value. Monetary penalties are also frequently levied as punishments, particularly with adults.

The removal of positive reinforcers as a punishment technique should be distinguished operationally from extinction procedures, although both methods may reduce responding through some common processes. In extinction, consequences that ordinarily follow the behavior are simply discontinued; in punishment, behavior results in the application of aversive consequences through forfeiture of positive reinforcers. Thus, in extinguishing aggression sustained by peer attention, the behavior is consistently ignored; under the punishment contingency, however, the



rewards of peer attention are pitted against the negative effects of confinement to one's room, loss of television privileges, or some other type of negative outcome. As is true of other forms of aversive control, the amount of behavioral reduction produced by punishment through removal of positive reinforcers will depend, among other factors, upon the relative magnitude of the opposing consequences. The most effective way of permanently eliminating undesirable responses, of course, would be to remove the positive conditions maintaining the behavior. In many situations, however, the rewards dispensed by others cannot be easily controlled. Under these circumstances negative sanctions may be effectively employed to reduce deviant response patterns and to hold them in check while alternative modes of behavior are being established and strengthened.

### *EXPERIMENTAL STUDIES OF PUNISHMENT BY REINFORCEMENT WITHDRAWAL*

Laboratory studies of the efficacy of punishment by reinforcement withdrawal have been largely confined to procedures in which the occurrence of selected responses produces a loss or temporary time-out from positive reinforcement that was previously available. A number of these experiments were primarily designed to determine whether time-out punishment functions as an aversive stimulus analogous to shock stimulation or other physically hurtful events (Azrin & Holz, 1966; Leitenberg, 1965). The findings generally show that reinforcement time-out consequences can produce durable reductions in responses if an alternative mode of behavior is available to the subject (Holz, Azrin, & Ayllon, 1963), or the contingencies maintaining the behavior have been removed

(Baer, 1961; Nigro, 1966).

Results of an illustrative experiment by Baer (1962), however, disclose that reductive effects are transitory in the case of behavior that continues to produce powerful self-reinforcing consequences. Young boys who displayed persistent thumbsucking were shown cartoons. Both boys watched the films together, but interruption of the cartoon was made contingent upon thumbsucking for one of the subjects, whose response brought noncontingent film stoppages for the other boy. Halfway through the experiment their roles were reversed. Contingent interruption of enjoyable cartoons produced a marked decrement in thumbsucking, but no decrease occurred when punishment was randomly related to the behavior. However, during periods when the punishment contingency was suspended the boys promptly reverted to sucking their thumbs.

The preceding studies demonstrate that brief reinforcement withdrawal can function analogously to an aversive stimulus in reducing behavior. Similar reductive effects are achieved by punishment through response-cost contingencies in which monetary points are lost each time negatively sanctioned behavior is performed (Elliott & Tighe, 1968; Weiner, 1962). Laboratory investigations of other behavioral effects of reinforcement withdrawal provide further evidence that it possesses some of the functional properties of an aversive event. It has been shown (Ferster, 1958; Morse & Herrnstein, 1956; Zimmerman, 1963) that behavior which prevents or terminates reinforcement withdrawal is effectively maintained in much the same way as avoidance responses are sustained by their success in preventing the occurrence of physically painful consequences. Moreover, neutral stimuli

that are regularly associated with reinforcement withdrawal tend to acquire negative properties (Ferster, 1960; Ferster, Appel, & Hiss, 1962). Unlike the effects of physical punishment, however, stimulus events that signal the advent of reinforcement withdrawal do not seem to generate disruptive emotional arousal (Leitenberg, 1965).

Several attempts have been made to compare the relative power of reinforcement withdrawal and presentation of physically aversive stimuli in reducing selected response patterns. Tolman & Mueller (1964) employed different types of punishers with a young rhesus monkey who developed a marked affinity for one toe, commonly sleeping with it in his mouth and sucking it while climbing about on two hands and one foot. Since the monkey had mainly interacted with humans (monkey-rearing practices would

probably not have produced a chronic toe-sucker), visual contact with people (viewed through a small window) served as the positive reinforcer. Punishment periods, in which the window was closed whenever the monkey placed its toe in its mouth and was opened upon removal of the toe, alternated with nonpunished periods during which the window remained continually open. The second phase of the experiment followed a similar procedure except that window-closing was replaced by unpleasant sounds at the onset of toe-sucking; the sounds terminated as soon as the toe was removed. During noncontingent punishment the aversive sounds were simply presented at periodic intervals without regard to the animal's behavior. Punishment through aversive sound stimulation produced a marked reduction in toe-sucking; recovery was delayed, but once the response recurred it was emitted at a relatively

high rate. On the other hand, punishment by the removal of social stimuli resulted in less abrupt decrement; recovery was more gradual and less complete.

Comparative data are difficult to evaluate when based on an experiment with a single subject, in which potency of the punishing stimuli was not equated, and possible order effects were not controlled. However, the findings of Tolman & Mueller are essentially corroborated by McMillan (1967), who assessed the relative efficacy of contingent shock and temporary withdrawal of rewards in eliminating a concurrently reinforced response. Both types of punishers reduced responding to about the same degree, but the time-out procedure was associated with less behavioral recovery.

The adjunctive use of punishment by

reinforcement withdrawal has certain advantages over physically aversive procedures. As previously shown, aversive interventions may arouse fear and avoidance of punishing agents, and thus weaken their potential influence. In contrast, methods that chiefly involve the removal of positive reinforcers not only generate much weaker emotional effects, but they tend to foster and maintain orientation toward the agents who control the desired positive resources. If restoration of the positive reinforcers is made contingent upon performance of alternative modes of behavior, rapid behavioral changes may in fact result.

#### *BEHAVIORAL CONTROL BY WITHDRAWAL OF POSITIVE REINFORCERS*

Reinforcement withdrawal has proved to be an effective means of managing deleterious behavior that often impedes the person's own development



and seriously infringes on the well-being of others. If combined with methods that foster constructive alternatives this form of behavioral control can aid achievement of enduring changes in social behavior.

In applications of time-out procedures, behaviors that are considered unacceptable and the consequences that they will produce are clearly explained in advance. When social exclusion is employed as the negative outcome, as is usually the case, each transgression results in brief social withdrawal that is carried out immediately, naturally, and in a firm but nonhostile manner. If, during the time-out interval, the person continues to display obstreperous behavior, the period of exclusion is extended until cessation of the behavior. Under this type of contingency self-control is quickly established. Since social attention accompanying a

disciplinary intervention may reinforce the preceding deviant behavior, the change agent minimizes social and verbal interaction as much as possible while the negative sanction is being applied.

The way in which time-out contingencies may be employed as part of a broad program is illustrated in the treatment of an autistic three-year-old boy by Wolf, Risley, & Mees (1964). In addition to grossly retarded social and verbal development, the boy exhibited violent tantrums that included head-banging, face-slapping, hair-pulling, and face-scratching. After a tantrum he was badly bruised and bleeding, and refused to sleep at night, forcing one or both parents to remain by his bed. Sedatives, tranquilizers, and physical restraints were applied without success. When it became clear that refusal to wear eyeglasses (necessitated by the removal of

cataractal lenses) might result in ultimate blindness, psychologists were invited by the hospital staff to devise a treatment program for him. Ward attendants, and later his parents, carried out the prescribed program under the guidance and direction of the consultants.

Most of the boy's recurrent problem behaviors, which obstructed any treatment efforts, were eliminated by a procedure combining extinction and punishment through reinforcement withdrawal. In modifying the tantrum behavior, for example, whenever the boy slapped himself and whined he was placed in his room where he remained until the tantrum ceased. During the initial phase of treatment the attendants offered elaborate apologetic explanations while escorting him to his room, and showered him with attention when he returned. These accompanying reactions converted the exclusion into a rewarding

experience, with the result that the boy displayed frequent tantrums followed by brief perfunctory trips to the room. A minimum time of 10 minutes in the room was therefore instituted and the attendants were instructed to minimize the inadvertent social reinforcement. Under this contingency the frequency of violent tantrums gradually declined and eventually disappeared. Eating problems, in which the boy grabbed food from other children's plates, threw it about the room, or ate with his fingers, were rapidly eliminated in a similar manner. The attendants simply removed him from the dining room for the remainder of his meal for snatching or tossing food after a warning, and withdrew his plate for a few minutes whenever he ate with his fingers.

Use of social exclusion sometimes leads to new problems which must be dealt with. During the period of isolation the child may, for example,

proceed to wreck the furnishings in the room, he may inflict injury upon himself, or exhibit other harmful behaviors. This problem arose in mild form during the treatment of the boy's sleeping patterns, which were extremely irregular and required the extended presence of the parents or attendants at bedtime. After completion of pleasant bedtime routines, the boy was put to bed, and left with the door open. If he refused to remain in bed, the door was closed, which initially gave rise to violent temper tantrums. These tantrums were controlled by extending the time that the door remained closed until after the tantrum subsided. Under the cumulative punishment contingency the tantrums rapidly disappeared and normal sleeping patterns were established by the sixth night. Similarly, destructive discarding of eyeglasses ceased within five days when the boy was placed in his room for

10 minutes whenever he threw his glasses, or if tantrums developed, until they abated.

The foregoing account has emphasized aversive controls. It should be noted that, in the total program, positive reinforcement was also extensively employed to get the boy to wear eyeglasses, and he was positively guided and rewarded for more appropriate behavior patterns. Prior to treatment, the boy was totally lacking in communicative skills, which were gradually established through reinforced modeling. The development of more rewarding competencies undoubtedly contributed to the effectiveness of mild punishment.

As the boy's condition improved, contacts with his family and home were progressively increased. At first the parents visited the hospital for one hour and observed the way in which tantrums and

bedtime problems were handled by the attendants. Subsequently the parents made several visits a week, during which an attendant observed and instructed them in their handling of their son. Then he began short home visits accompanied by an attendant, followed by progressively longer visits. After discharge, he no longer manifested severe behavior problems, he had become increasingly verbal, and the family interactions were considerably more enjoyable. The reinforcement procedures were extensively applied for several years in a nursery school setting where the boy made sufficient progress to enroll in public school (Risley & Wolf, 1966; Wolf, Risley, Johnston, Harris, & Allen, 1967). Time-out procedures were used occasionally in early phases to eliminate tantrum behavior, exhibited whenever he was asked to perform an instructional task, and to control hurtful behavior

toward other children.

Reference has already been made to several studies in which self-injurious behavior in autistic children was completely eliminated or markedly reduced by reinforcement withdrawal. Similar methods have been shown by Hamilton, Stephens, & Allen (1967) to be uniformly successful in eliminating injurious aggressive and self-destructive behavior in severely retarded adolescents. In each instance, the individual was physically confined to a chair in a time-out area for a fixed period following the occurrence of injurious behavior. In one case, for example, a girl beat her head and back against the wall a total of 35,906 times during four 6-hour observations—about once every three seconds! When the time-out contingency was later put in effect, head-banging precipitously dropped to a negligible level of 7, 2, 0, 1, 0 for five successive weeks and never



reappeared during nine months of follow-up study. Of considerable import, both from a clinical and ethical standpoint, is that after the continual self-mutilating behavior was eliminated the retardates participated with evident enjoyment in daily social and recreational activities. The authors make the interesting observation that, following removal of pervasive deviant behavior, individuals begin to make contact with potentially rewarding aspects of the environment that were always available, which automatically reinforce beneficial modes of behavior. Once a self-regulating interaction between behavior and environmental contingencies is initiated, widespread changes may result even though alternative behaviors were never deliberately established.

Several additional case reports have been published which furnish quantitative data indicating the efficacy of time-out procedures in

modifying diverse behavioral disorders. Sloane, Johnston, & Bijou (1968) rapidly eliminated extreme aggressiveness in a preschool boy, and Burchard & Tyler (1965) reduced the antisocial behavior of a delinquent adolescent by contingent social exclusion. This procedure has also been employed by Tyler & Brown (1967) on a group basis with institutionalized delinquents. The staff of a rehabilitation center was unable to check aggressive, disruptive behavior of delinquent boys that was highly troublesome during recreational periods but not serious enough to warrant severe sanctions. A program involving short periods of mild punishment for misbehavior was instituted to control the group. Every time a boy displayed offensive behavior he was immediately placed in a room in the cottage for 15 minutes without any threats, invective, sermonizing, or negotiations for second chances. Consistent with previous findings,

brief social withdrawal produced a marked decline in the incidence of disruptive behavior. In order to determine whether punishment had lasting effects, the aversive consequences were discontinued; instead, the staff reprimanded the boys verbally and occasionally closed the recreational facility temporarily when their behavior got completely out of hand. During the period when negative sanctions were removed there was a rapid increase in the rate of offenses. However, when the punishment contingency was subsequently reinstated disruptive behavior subsided with equal rapidity and remained at a low level. Apparently the boys were quick to discriminate the changes in conditions of reinforcement and regulated their behavior accordingly. The aversive control thus proved to be an exceedingly effective management technique but, unlike previous findings, it produced no

enduring changes in behavior.

The conflicting results are most likely due to the types of reinforcement systems created by peers in institutions for delinquents. An observational study by Buehler, Patterson, & Furniss (1966) revealed that delinquent peers provide extensive positive reinforcement for antisocial behavior, whereas they typically punish attitudes and behavior that conform to institutional norms. If negative sanctions applied by staff members are strong enough to outweigh peer influences, socially conforming behavior may be achieved and sustained as long as the institutional sanctions remain in effect. However, when aversive controls are removed, peer reinforcement practices will quickly reinstate deviant patterns of behavior. To achieve stable changes in behavior would require modifications of the contingency systems practiced by peers like

those, for example, that Cohen (1968) successfully accomplished by placing delinquents' livelihood within the institution on a self-determining basis. When contingencies are arranged so that constructive behavior is adequately reinforced and antisocial behavior has limited pay-off, antisocial personalities are less inclined to seek their rewards from outwitting staff members or from perturbed reactions of others to crisis-producing transgressions (Colman & Baker, 1968).

“Systematic exclusion” is increasingly employed in school settings (Chapman, 1962; Kiersey, 1958) as a means of controlling seriously disturbing behavior in children after other available methods have failed. In this program the child, his parents, his teacher, the school psychologist, and the principal meet as a group to arrange explicit contingencies between the child's disruptive conduct and its social consequences. At

this meeting, each participant's role is specifically outlined. It is explained that the school cannot permit a child continually to disrupt the educational activities of an entire class. The child's help is enlisted to control, as best he can, behavior that has disturbing effects on all concerned. Whenever he displays behavior that exceeds certain clearly defined limits, the teacher must ask him to leave school for the remainder of the day. In order to remove any inadvertent positive reinforcement of the deviant behavior, the teacher is instructed not to threaten, coax, urge, or scold the child, nor is she to engage in persuasive attempts to alter his behavior. Rather, the previously agreed-upon sanctions are applied immediately, straightforwardly, and in a matter-of-fact way. By having the teacher apply prearranged contingencies in a consistent and objective fashion, the child is more likely to regard

the disciplinary interventions as natural, inevitable consequences of his behavior, than as arbitrary or malevolent treatment by his teacher. If the child should refuse to leave when he is requested, the principal removes him and the period of exclusion is automatically extended.

When the child arrives home, the parents are instructed to keep him on the premises during the remaining school hours, but to refrain from punishing, scolding, or applying other disciplinary measures. The psychologist's function is to structure and to supervise the program, to offer the participants positive assistance when needed, and to decide when the contingencies are to be discontinued.

The authors report that systematic application of exclusion consequences produces rapid and lasting reduction in chronically disruptive

behavior, but no quantitative data are presented, nor is there any specification of the conditions under which this method is most efficacious. It is apparent that an exclusion procedure will produce no behavioral changes, or may even augment deviant responsiveness, if the situation from which a person has been removed is unrewarding or highly unpleasant. Under these circumstances, withdrawal has positively reinforcing rather than punishing effects. It has been shown in laboratory studies (Herrnstein, 1955), for example, that behavior which produces a temporary time-out from reinforcement increases in frequency if the conditions of reinforcement that the behavior avoids are relatively unfavorable.

The effectiveness of exclusion procedures can probably be greatly enhanced if, in addition to the punishment contingency, the child is provided with certain privileges and rewards for each class



period during which he does not engage in disruptive behavior. It would also be of interest to explore the rate at which deviant behavior decreases as a function of varying durations of exclusion, the types of situations to which the child is removed, and the attractiveness of the setting from which he is withdrawn. Findings of studies employing time-out contingencies to control grossly deviant behavior indicate that much briefer periods of exclusion might work as well, or even better, than full-day suspensions from classroom activities.

## Summary

The present chapter has discussed the processes whereby response patterns are eliminated through the use of punishing stimuli. Punishing consequences may involve either removal of positive reinforcers or presentation of

aversive events. Punishment is believed to achieve its reductive effects by producing conditioned fear that elicits inhibitory behavior's, or by facilitating the appearance of responses that are incompatible with and, therefore, capable of supplanting the punished behavior. The degree of control exerted by punishment is largely a function of the intensity, duration and distribution of aversive consequences, their temporal relation to the behavior to be modified, the strength with which punished responses are concurrently reinforced, the availability of alternative modes of behavior for securing rewards, the level of instigation to perform the negatively sanctioned behavior, and the psychological characteristics of punishing agents.

Several different theories have been proposed concerning the locus of aversive control. Environmental stimuli that are regularly

associated with punishing experiences may become conditioned elicitors of fear and have suppressive effects on behavior. A second interpretation is that proprioceptive stimuli arising from the punished behavior itself acquire negatively reinforcing properties through association with punishing experiences on previous occasions. Although response-contingent punishment produces reductive effects, evidence that behavioral inhibitions can be readily acquired and extinguished under curare or through vicarious experiences without any motoric responding seriously challenge peripheral views that aversive control resides mainly in response-produced cues. Rather, these findings lend weight to the theory that the effects of punishment are mediated through central controlling mechanisms. On the basis of previous response consequences, experienced either directly or vicariously under

differing circumstances, individuals infer the likelihood that a given course of action will produce punishing outcomes. Symbolic representation of these anticipated consequences can exercise some degree of control over overt responsiveness. The same behavior may, therefore, be freely expressed or inhibited in similar environmental situations as a result of intricate discriminations of differences in reinforcement contingencies.

Aversive forms of control have been primarily employed to eliminate persistent responses that are automatically self-reinforcing upon occurrence, to reduce the incidence of seriously disturbing patterns of behavior for which the maintaining positive reinforcements cannot be identified or readily eliminated, and to bring rapidly under control responses that have injurious consequences for the performer or

others. While findings of controlled studies are still somewhat limited, preliminary results of applications of aversive procedures to the modification of persistent deviant behavior are considerably more encouraging than laboratory findings would lead one to expect. Chronic self-mutilating behavior, debilitating occupational cramps of long standing, stuttering, antisocial aggression, and deviant patterns of sexual behavior have been substantially reduced or eliminated by methods relying upon contingent application of negative consequences.

The relative ineffectiveness of punishment in producing durable reductive effects in laboratory situations has probably resulted from the fact that, with few exceptions, the punished response constitutes the sole means of securing rewards. Hence, it comes as no surprise that in single-response situations punished behavior is

performed for some time even though it incurs aversive consequences, and it often reappears when punishment is discontinued. In contrast, people generally have numerous options available in everyday life. Even though punishment may only temporarily inhibit dominant responses, during the period of suppression alternative modes of behavior may be strengthened sufficiently to supplant the original response tendencies. Moreover, brief cessation of behavior that is highly disturbing to others eventually draws positive reactions from appreciative associates. The new conditions of reinforcement created by cessation of deviant responses may foster and maintain their relinquishment. By the same token, rodents or pigeons that were suddenly showered with food pellets and increased positive attention from relieved comrades, after inhibiting a socially distressing

bar-press response, would undoubtedly abandon the cherished bar more rapidly than they would if no alternative activities were available and response inhibition produced no outcomes other than the removal of aversive stimulation and loss of food rewards. For these and other reasons, the social implications of laboratory findings regarding aversive control must be accepted with reservations.

Some of the cited negative by-products of aversive control can be avoided or reduced to a large extent by the use of discrimination procedures in conjunction with punishing consequences. Moreover, punishment based upon the removal of positive reinforcers ordinarily reduces undesired behavior without producing fear learning or avoidant behavior. This procedure also tends to maintain strong approach tendencies toward change agents, and, when reinstatement of

approval, possessions, or privileges is made conditional upon more appropriate behavior, it provides more positive support and guidance than mere administration of negative outcomes.

Lasting elimination of detrimental behavior can be most effectively facilitated by punishment if competing response patterns are simultaneously rewarded. Negative sanctions may therefore be successfully employed to hold undesired responses in check while alternative modes of behavior are being established and strengthened. Another means of weakening undesired behavior, relying upon extinction operations, is discussed in the next chapter.

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## Extinction

When reinforcement for a learned response is withheld, individuals will continue to exhibit that behavior for a limited time. Under repeated nonreinforcement, however, the behavior decreases and eventually disappears. This decline in responsiveness as a function of nonrewarded repetition of a response is called extinction. In naturally occurring situations response patterns sustained by positive reinforcement are frequently eliminated simply by discontinuing the rewards that ordinarily produce the behavior. Avoidance behavior, which is strongly maintained by its success in forestalling anticipated aversive experiences, can similarly be extinguished if, when

it is prevented from occurring in the presence of threatening stimuli no adverse consequences are engendered. With repeated nonreinforced exposure to subjective threats, protective behavior that is inappropriate to the altered circumstances is eventually abandoned. In both instances the extinction process is essentially the same, although the procedures vary according to the nature of the maintaining consequences.

### **Interpretations of the Extinction Process**

The rate of extinction is governed by a number of factors, among them the irregularity with which the behavior was reinforced in the past, the amount of effort required to perform it, the level of deprivation present during extinction, the ease with which changes in conditions of reinforcement can be discerned, and the availability of alternative modes of response. Because of the diversity of

controlling variables, a number of different theoretical conceptualizations of extinction have been proposed (Kimble, 1961), each emphasizing a separate aspect of the phenomenon. These formulations and their supporting evidence are reviewed next.

### *CONDITIONED INHIBITION THEORY*

According to Hull's (1943) theory of extinction, repeated nonreinforced elicitation of an effortful response generates an inhibitory state analogous to fatigue, which tends to counteract the recurrence of the response. Since this reactive inhibition dissipates with time, it presumably exerts only a temporary suppressing influence on behavior. Some support for the fatigue hypothesis is provided by the well-known phenomenon of spontaneous recovery. When a response has been initially extinguished, it tends to reappear, though

typically at reduced strength, with the passage of time, suggesting the dissipation of a transitory form of inhibitory control. The fact, however, that the amount of recovery following successive extinctions becomes progressively smaller until it eventually reaches zero clearly indicates that additional processes are involved. Therefore, Hull postulated that in addition to response-produced inhibition, extinction also involves the production of conditioned inhibition. The enduring decrement in behavior was explained as follows: When reactive inhibition reaches a high level, cessation of activity alleviates the aversive motivational state, and, consequently, any stimuli associated with stoppage of the response become conditioned inhibitors. In this formulation, fatigue reduction resulting from the termination of behavior that produces aversive stimulation constitutes the primary reinforcing event.



It would follow from inhibition theory that any conditions which increase the amount of relative inhibition should facilitate extinction. The two factors that have been investigated most intensively in this regard are the rate of response evocation and the amount of effort required to perform the behavior. In general, research findings (Kimble, 1961) indicate that there is little diminution in response when extinction trials are widely distributed over time, whereas extinction occurs rapidly with massed response evocation. The evidence concerning the effect of effortfulness on extinction is somewhat equivocal, but the majority of investigations has shown that performances involving a large expenditure of effort extinguish more rapidly than those requiring little exertion.

Although a fatigue theory accounts for certain extinction phenomena, there are many facts that

cannot be adequately explained in terms of response-generated inhibition (Gleitman, Nachmias, & Neisser, 1954; Kimble, 1961; Mowrer, 1960). First, both reactive and conditioned inhibition depend upon repeated response evocation. There is ample evidence, however, that nonreinforced performance of behavior is a facilitative, but not a necessary, condition for extinction. These findings are based on different paradigms, in each of which responses are either partially or totally extinguished without ever being performed. In “latent extinction” studies, for example, animals that are merely placed directly in the empty goal box a number of times subsequently extinguish instrumental responses more rapidly than control groups placed in other situations lacking rewards (Deese, 1951; Seward & Levy, 1949; Moltz, 1955). Extinction of avoidance responses likewise can be greatly

facilitated independently of skeletal responding by repeatedly presenting a conditioned aversive stimulus to subjects who are muscularly immobilized by curare (Black, 1958). Moreover, autonomic responses, which are not known to generate fatigue states, also undergo extinction with repeated nonreinforced elicitation. Nonresponse extinction is perhaps most clearly revealed by experiments of vicarious extinction (Bandura, 1968) in which intractable avoidance responses of long standing are completely eliminated on the basis of observational experiences alone.

The limitation of explanations of extinction in terms of response-produced inhibition is also apparent in investigations of resistance to extinction as a function of variations in the percentage, magnitude, and serial patterning of reinforcement, and of changeable acquisition

conditions. Though the terminal levels of learning achieved under constant and variable circumstances are essentially identical, increasing the irregularities of reinforcement and training conditions increases subsequent resistance to extinction. Finally, in some instances nonreinforced elicitation may result in extremely rapid or even single-trial extinction before much reactive inhibition could possibly develop. The overall research evidence thus indicates that, while response-produced inhibition may be one determinant of extinction, additional processes are undoubtedly involved.

### *COMPETING-RESPONSE THEORY*

In the interference interpretation of extinction (Guthrie, 1935; Estes, 1959), the decrement of a response during nonreinforced evocation results from the appearance of incompatible responses

strong enough to supersede the ongoing behavior. These competing responses may be linked either to the same stimuli or to different stimulus events. In the latter case, response diminution primarily reflects external inhibition brought about by simultaneous occurrence of new prepotent stimuli that evoke antagonistic tendencies, or by attentional shifts to other distinctive features of the environment. In the former instance, which essentially involves a counterconditioning process, extinction results from the development of new incompatible responses to the same stimuli, or the reappearance of interfering responses that have been previously learned.

Any conditions, apart from the omission of reinforcement, that reduce the probability of occurrence of the original behavior will facilitate the appearance of competing response patterns. Some of these conditions, originally proposed by

Guthrie (1935), include introducing the controlling stimuli at such reduced intensity that they fail to evoke the undesired behavior; repeating the controlling stimuli after the original responses have been inhibited through fatigue so that new behavioral tendencies can be learned; and presenting the stimuli in the context of more powerful stimulus events that evoke incompatible responses of sufficient strength to override the undesired behavior. Response-prevention techniques relying upon physical barriers (Carlson & Black, 1959; Solomon, Kamin, & Wynne, 1953) also provide a means of ensuring the occurrence of alternative responses in the presence of conditioned aversive stimuli. In a theory of extinction emphasizing conditioned relaxation processes, Denny and his associates (Denny & Weisman, 1964; Weisman, Denny, Platt, & Zerbolio, 1966) contend that termination or

omission of aversive stimulation automatically produces relaxation responses that generalize backward to the fear-provoking situation and compete with avoidance behavior.

Given the emergence of competing responses, whatever their source, the nature of the reinforcement that maintains new behavioral tendencies within the extinction situation remains to be explained. It will be recalled that reduction in fatigue associated with the cessation of effortful behavior was assumed in Hullian theory to reinforce inhibitory responses. Some research evidence suggests that the termination of aversive emotional effects generated either by fear-producing stimuli or by repeated nonreward may also provide supporting reinforcement.

Page reports a series of experiments that illustrate the extinction of avoidance behavior

through the development of incompatible responses. In the initial study (Page & Hall, 1953), animals learned to avoid shocks administered in one compartment of a shuttle box by escaping into a neutral chamber. The avoidance responses were then extinguished in two different ways: Control animals were given regular extinction trials in which they performed avoidance responses until they stopped running from the threatening compartment; the experimental subjects were detained in the fear-provoking box for the first five trials and then given traditional extinction trials. The barrier group extinguished approximately three times as fast as the controls.

In order to determine if elimination of avoidance responses in the first study was due to the acquisition of competing protective responses or to neutralization of the fear-evoking stimuli, Page (1955) conducted a second experiment that



proceeded in the following manner: The initial phase of the study, which duplicated the procedure of the earlier experiment, similarly demonstrated that animals first detained in the threatening compartment subsequently extinguished much more rapidly than controls given regular extinction trials. In the second phase of the study, designed to measure the aversive properties of the conditioned stimuli, the animals were placed in the neutral chamber after being deprived of food and the speed with which they entered the shock compartment for food was measured. In addition, a control group of animals never exposed to shock stimulation was tested. The approach response latencies averaged approximately 25, 60, and 110 seconds for the control, regular extinction, and response-prevention groups, respectively. It seems clear from the two sets of data that under forced

exposure to fear-arousing stimuli a dominant mode of avoidance behavior was eliminated, but the animals nevertheless retained some fear of the negative compartment. These findings indicate that the threatening stimuli continued to generate aversive stimulation and whatever protective responses the animals adopted in the situation were reinforced by the omission of painful shocks.

In the extinction of avoidance behavior, absence of expected adverse consequences provides a powerful source of reinforcement for competing responses. In the elimination of behavior previously maintained by positive reinforcement, reduction of aversive emotional arousal produced by omission of anticipated rewards may likewise constitute the main reinforcement for antagonistic responses. According to the frustration interpretation of extinction (Amsel, 1962; Wagner, 1966),

nonrewarded repetition of responses generates aversive arousal capable of evoking conflicting response tendencies that interfere with the ongoing behavior. By supplanting the nonrewarded behavior the competing responses reduce disturbing emotional arousal and are thereby negatively reinforced. Consistent with these theoretical speculations, it has been shown that nonreward produces aversive effects analogous to punishment operations. Stimuli previously associated with nonreward acquire arousal properties (Wagner, 1963), their presence attenuates responding (Amsel & Surridge, 1964), and escape from cues signifying nonreward can reinforce new performances (Wagner, 1963).

The appearance of new behavior that is antagonistic to nonreinforced responses will undoubtedly accelerate the extinction process. In many instances, however, rapid elimination of

nonrewarded behavior results from the development of expectations about the future probability of reinforcement rather than from the gradual conditioning of incompatible responses to the same controlling stimuli. The discrimination theory of extinction, which is reviewed next, treats extinction as a centrally, rather than a peripherally, mediated phenomenon.

### *DISCRIMINATION THEORY*

Interpretations of extinction in terms of discrimination emphasize the role of observational and cognitive processes. According to this formulation, behavior is performed for some time after reinforcement has been discontinued because the subject has failed to recognize that previous reinforcement contingencies are no longer in effect. It would follow from this hypothesis that variables which

reduce the discriminability between prior conditions of reinforcement and those of extinction should prolong nonrewarded responding.

Numerous experiments, in which the difference between acquisition and extinction has either been systematically varied or is easily inferable, provide supporting evidence for the discrimination hypothesis. Behavior established under intermittent reinforcement, for example, is more resistant to extinction than responses following continuous reinforcement. When rewards are suddenly discontinued, it is reasonable to suppose that persons who have been reinforced each time they respond will recognize the change more readily than those who have always been reinforced irregularly. The lower the frequency of reinforcement, the less discernible are the changes. It is perhaps for

similar reasons that, even under the same degree of partial reinforcement, behavior that has been rewarded irregularly extinguishes less rapidly than responses established by a regular, predictable schedule of intermittent reinforcement (Ferster & Skinner, 1957; Kimble, Mann, & Dufort, 1955; Longenecker, Krauskopf, & Bitterman, 1952). Moreover, behavior is highly resistant to extinction following training that includes long series of consecutively nonreinforced trials (Slamecka, 1960). The latter conditions would make it particularly difficult to determine when extinction has begun.

Discriminations can be formed not only on the basis of the frequency and patterning of reinforcing stimuli, but also in terms of other distinguishable features of the environment that signify a change in reinforcement practices. The presence during extinction of stimuli that have

previously signified that appropriate performance will be reinforced results in faster extinction than if the positive discriminative cues are absent (Elam, Tyler, & Bitterman, 1954; McNamara & Paige, 1962; Slamecka, 1960). These findings, which are contrary to secondary reinforcement theory, are in accord with the discrimination hypothesis. If responses in the presence of stimuli that formerly signaled a high likelihood of reward are no longer reinforced, it is made apparent that the original reinforcement contingencies have been discontinued. However, Longstreth (1966) interpreted similar findings with children in terms of frustration theory, which holds that when a stimulus previously paired with reward is subsequently presented alone it generates aversive emotional responses that interfere with ongoing behavior.

Irregular conditions of learning would also be

expected to increase the complexity of discrimination and hence to prolong the persistence of nonrewarded performances. In several experiments, response patterns that are acquired under variable stimulus conditions (e.g., gross changes in drive states, environmental stimuli, required performances, and in the frequency, magnitude, and delay of reinforcement) are extinguished under unchanging circumstances. Results of these studies disclose that resistance to extinction increases with increased variability in conditions of learning (McClelland & McGown, 1953; McNamara & Wike, 1958; Mackintosh, 1955).

While the above findings are consistent with the discrimination hypothesis, they can be adequately explained without the necessity for invoking symbolic processes. Under variable circumstances different types of responses are



learned to a variety of stimuli. It would therefore require a longer time to extinguish a varied assortment of responses than a single response made to a limited number of stimuli presented under invariant conditions. The results of a study by Brown & Bass (1958), however, bring into question both the discrimination and the multiple-learning interpretations. In this experiment subjects were both trained and extinguished under constant or variable stimulus conditions. Persistence of non-rewarded behavior was primarily affected by variation in stimulation during extinction rather than by the degree of contrast between acquisition and extinction that should facilitate discrimination, or by the amount of change in stimulus conditions during acquisition that should promote more generalized learning.

The potentially influential role of observational

experiences in extinction is disclosed by studies alluded to earlier, employing nonresponse extinction procedures. Mere observation that formerly rewarding situations no longer contain rewards facilitates the elimination of instrumental approach responses. Moreover, the larger the number of positively discriminative stimuli retained in the situation in which rewards were previously dispensed, the faster the response extinction (Denny & Ratner, 1959; Moltz, 1955).

While the efficacy of observational extinction procedures has been well established under a variety of conditions (Deese, 1951; Dyal, 1963; Koppman & Grice, 1963; Seward & Levy, 1949; Wilson & Dyal, 1963), the response decrements may be interpreted in several ways. One possible explanation is in terms of cognitive processes. Repeated observation that formerly available rewards are now absent undoubtedly conveys

information to the observer about the altered conditions of reinforcement. However, when environmental stimuli that signify the reinforcement contingencies associated with given behavior are also removed, the observed situation bears little resemblance to, and hence provides little information about, the original one. There is no reason to suppose that under such circumstances expectations regarding the customary reinforcement contingencies should be modified to any significant extent. Repeated exposure to formerly rewarding stimulus contexts may also extinguish the secondary reinforcing properties of environmental stimuli that had been regularly associated with primary reinforcement (Moltz & Maddi, 1956). The latter outcome would likewise serve to hasten the extinction process.

The research cited above has been primarily confined to infrahuman subjects; perhaps for this

reason fractional anticipatory response mechanisms and associated proprioceptive cues have frequently been invoked as explanatory factors. In the case of humans, who possess superior discriminative and symbolic capacities, the informative value of observational experiences regarding reinforcement contingencies would assume considerably greater importance in eliminating nonreinforced behavior.

According to this more cognitive view, extinction primarily reflects the operation of inhibitory sets rather than the loss of behavior or its disconnection from previous controlling stimuli. For this reason behavior can be discarded even without having been performed on the basis of observation that such behavior is no longer reinforced, it can be promptly replaced by more utilitarian modes of response, and readily reinstated whenever the original reinforcement

contingencies are restored.

The theory of cognitive control of extinction is supported by several lines of evidence, some of which are discussed fully in the concluding chapter. Extinction is greatly facilitated by awareness that the usual consequences have been discontinued; and, conversely, it is retarded under diverting instructions that reduce discriminability of the change in reinforcement (Spence, 1966). In fact, when presentation of reinforcement is embedded in a diverting task that ensures exposure to stimulus events but prevents recognition of their contingent relationship, the rate of extinction is the same for responses originally acquired under either partial or continuous reinforcement.

The common finding that irregular reinforcement produces behavior that is more

resistant to extinction than continuous reinforcement is also disconfirmed when discriminability between acquisition and extinction is equalized by informing subjects at the onset of extinction that painful stimuli will not be presented on subsequent trials (Bridger & Mandel, 1965). As can be seen from Figure 6-1, the partial reinforcement effect was obtained for noninformed subjects but induced awareness essentially abolished conditioned autonomic responses, regardless of whether they were acquired on a 100 percent or 25 percent schedule of reinforcement. Numerous other investigations of symbolic control of extinction reveal that persons who are simply informed that reinforcement has been discontinued display a precipitous decrement in both conditioned autonomic responses (Cook & Harris, 1937; Grings & Lockhart, 1963; Notterman, Schoenfeld, & Bersh,

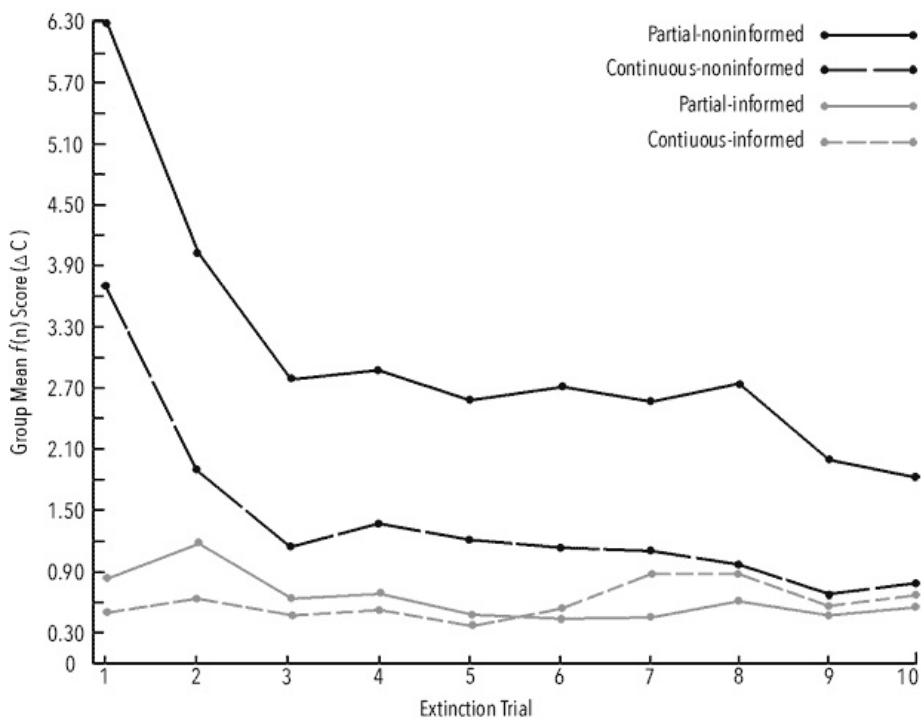


Figure 6-1. Rate of extinction of GSRs as a function of awareness and the schedule of reinforcement employed during the acquisition phase. Bridger & Mandel, 1965.

1952; Wickens, Allen, & Hill, 1963) and instrumental avoidance behavior (Lindley & Moyer, 1961; Moyer & Lindley, 1962), whereas uninformed subjects show a more gradual decline in responsiveness.

The influence of verbalized contingencies in facilitating extinction presupposes a history of differential reinforcement on the basis of which verbal cues become reliable indicants of probable response consequences. In cases where social agents or verbal communications are considered untrustworthy, where the real or imagined consequences of certain actions are highly injurious, and where environmental events are not entirely predictable, verbal control of extinction is apt to be relatively weak. It is extremely unlikely, for example, that informing snake-phobic persons that a particular reptile is harmless will result in any appreciable decrease in snake avoidance



behavior.

The powerful symbolic control over emotional responses developed under laboratory conditions contrasts sharply with the refractory quality of fears acquired through natural experiences. The difference may arise partly from the degree of control exercised by change agents over the feared events. By turning off the shock apparatus or removing shock electrodes, experimenters can completely remove any potential threats from the situation. In contrast, naturally feared objects that are ordinarily innocuous can nevertheless occasionally produce hurtful effects despite assurances to the contrary. Even harmless snakes or dogs do bite. However, this explanation does not fully reconcile the divergent findings because snake phobics experience considerable emotional disturbance to pictures of reptiles (Bandura, Blanchard, & Ritter, 1969) while acknowledging

that the agitation is groundless because pictorial snakes cannot possibly inflict any injury. The overall evidence would seem to indicate that emotional behavior may be controlled by two different stimulus sources. One is the emotional arousal self-generated by symbolic activities in the form of emotion-provoking thoughts about frightening or pleasurable events. The second is the response evoked directly by conditioned aversive stimuli. The former component would be readily susceptible to extinction through cognitive restructuring of probable response consequences, whereas elimination of the latter component may require repeated nonreinforced exposure to threatening events either directly or vicariously (Bridger & Mandel, 1964). The differential rate of extinction of emotional responses arising from symbolic self-stimulation and from direct external evocation are discussed more fully in later

considerations of symbolic regulation of behavior. Laboratory investigations in which verbal reports of experimenters are accorded high credulity, the aversive stimuli are of comparatively weak intensities, and experimenters have full control over the occurrence of aversive events, may therefore provide an insufficient explanation of the process of extinction, particularly as it applies to refractory avoidance behavior.

### *COGNITIVE DISSONANCE THEORY*

Lawrence & Festinger (1962) have proposed an explanation, in terms of cognitive dissonance processes, of why behavior that has been originally acquired under relatively unfavorable conditions of reinforcement may be especially resistant to extinction. According to this interpretation, when a subject is induced to engage in behavior that is insufficiently rewarded,

an aversive state of cognitive dissonance is created by the conflicting information of having expended effort for inadequate recompense. Under circumstances where the subject cannot easily cease responding, the resultant dissonance is reduced by enhancing the attraction or value of the activity to justify continuation of the behavior. After a subject has persuaded himself that he really likes engaging in the behavior it become more resistant to extinction when extrinsic rewards are later removed.

Several different types of reinforcement conditions are identified as especially prone to induce dissonance during the period of acquisition. Behavior that frequently goes unrewarded, that requires high expenditure of effort, and for which rewards are delayed, would be most resistant to extinction. Lawrence & Festinger have demonstrated in a series of well-

designed experiments with infrahuman subjects that responses established under these less advantageous conditions are indeed more persistent than those that are rewarded continuously, immediately, and at little expenditure of effort.

Other investigators have, of course, attributed the influence on extinction of these reinforcement variables to the operation of other mechanisms involving discrimination processes, frustration effects, and counterconditioning of competing responses. These alternative theories, therefore, need to be tested under conditions where they make opposing predictions. For example, resistance to extinction following both a highly variable and an entirely regular schedule of the same total partial reinforcement has been studied. The absolute number of unrewarded trials is identical in both conditions; consequently,

subjects are provided with the same number of occasions on which dissonance could be aroused and presumably reduced. Dissonance theory would predict the same rate of extinction under both conditions, whereas discrimination theory would lead one to expect the unpredictable schedule to produce the more durable behavior. Bitterman and his associates have conducted several such experiments in which subjects are reinforced on 50 percent of the training trials; for one group the rewards are administered haphazardly, while subjects in the other group are regularly reinforced on odd-numbered trials. Behavior is much more resistant to extinction (Tyler, Wortz, & Bitterman, 1953) after random 50 percent reinforcement than after regularly alternated 50 percent reinforcement. Analogous results are obtained in extinction of autonomic reactions which do not involve performance of any

effortful responses (Longenecker, Krauskopf, & Bitterman, 1952). Moreover, increased training, which provides more dissonance-reducing opportunities, facilitates extinction following alternating reinforcement, but it has no effect on behavior rewarded according to an unpredictable pattern (Capaldi, 1958).

Whether or not findings of the type reported above contradict dissonance theory cannot be resolved as long as there exists some ambiguity as to the conditions most likely to produce high dissonance. Do subjects who repeatedly perform effortful behavior knowing that it is unlikely to be rewarded experience more or less dissonance than if they had expected rewarding outcomes? The authors assume that the latter condition is more dissonance producing. It would seem, however, that subjects in the former condition are exhibiting the more irrational behavior and would,

therefore, experience greater pressure to justify their actions by persuading themselves that they really enjoy the activity. On the other hand, subjects who performed because they expected to be rewarded have adequate justification without needing to endow the activity with additional attractions. If reluctant performance of an action is accepted as behavioral evidence for the existence of dissonance (Lawrence & Festinger, 1962) then subjects trained under alternating reinforcement in the above experiments experienced more severe dissonance. As training progressed they continued to perform the behavior on unrewarded trials albeit with evident hesitancy.

The literature contains other findings that cannot be adequately accounted for by either dissonance theory or the alternative formulations. Young (1966) measured resistance to extinction as a function of variations in the effortfulness of



the response, the frequency of reward, and the number of unrewarded trials. The results showed that, under conditions where animals experienced many unrewarded trials during acquisition, the more effort required to perform the response, the more rapidly it was extinguished, whereas the opposite relationship was obtained when the training period included fewer nonreinforced trials. To further complicate the picture, no relationship was found between effortfulness of response and resistance to extinction for subjects trained under continuous reinforcement.

It is apparent from the experimental findings reviewed in the preceding sections that no single theoretical conceptualization can encompass adequately all of the diverse variables governing decrements in behavior when reinforcement is withdrawn. A person may cease responding for many different reasons and, therefore, a

comprehensive explanation of extinction phenomena requires a multi-process theory.

## **Extinction of Positively Reinforced Behavior**

It was previously shown how persistent deviant behavior is often maintained by intermittent positive reinforcement. Such contingencies are most likely to arise under conditions where desirable responses and even mild forms of deviant behavior are typically disregarded. On the other hand, the more persistent or intense responsiveness produces aversive consequences for others, who unwittingly reinforce the troublesome behavior in their efforts to terminate it. Because of its aversive quality, deviant behavior readily creates conditions that are likely to perpetuate it. It is true, of course, that troublesome activities are also frequently punished, but a reinforcement schedule combining

intermittent reward with occasional punishment generally results in behavior that is resistant to change. Moreover, many interventions intended as punishments actually serve as positive reinforcers that maintain undesirable behavior. Self-defeating contingencies usually go unnoticed because people tend to see only the immediate results, whereas they rarely systematically evaluate the changes produced by their practices, or the long-term effects that their behavior may have on others. Therefore, detrimental social systems are often unknowingly created and mutually sustained, because deviant behavior is rewarded by the attention it commands and ineffective control techniques are reinforced by their success in temporarily checking disturbing performances.

The positively reinforcing effects of verbal reprimands are well illustrated in a field study by Madsen et al. (1968) of disruptive behavior in

classroom settings. After the frequency with which children left their desks was recorded, teachers consistently reprimanded them for standing and told them to sit down. The admonishments promptly increased the number of children standing (Figure 6-2). In the subsequent baseline phase teachers reduced reprimands to their original moderate level, which produced a corresponding reduction in the number of upright students. However, they were springing up again at high rates when procedures were altered so that transgressive behavior evoked frequent “sit-down” commands. During the final phase of the study, teachers ignored standing and praised the children for working at their desks, a practice that reduced the incidence of disruptive behavior to its lowest level.

In eliminating behavior maintained by positive reinforcement, extinction can be accomplished

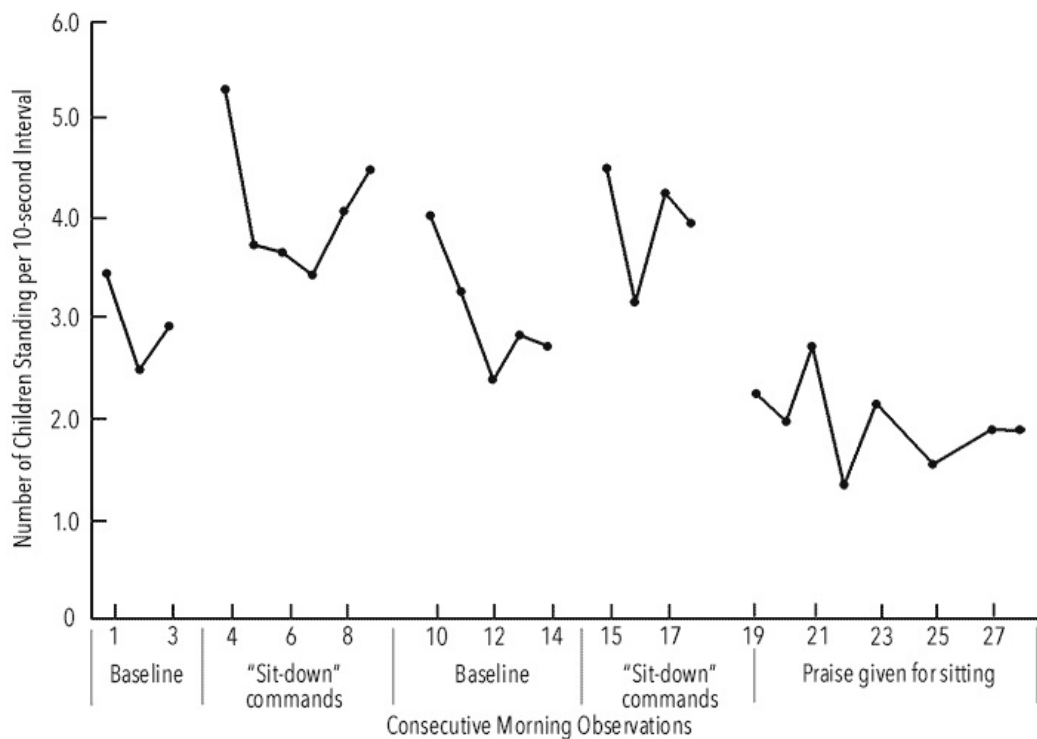


Figure 6-2. Number of children standing in class during baseline periods and when such behavior produced verbal admonishments or incompatible responses were positively reinforced. Madsen et al., 1968.

simply by discontinuing the reinforcing consequences. In social change programs extinction procedures are often combined with positive reinforcement of incompatible behavior. When extinction is a component in a multiform procedure its separate contribution to behavioral changes is difficult to evaluate, and categorization of the treatment method is somewhat arbitrary.

Several issues relating to extinction processes are revealed in Williams' (1959) successful elimination of aggressively demanding behavior in a young boy. This child had been ill for the first 18 months of his life and had required considerable attention and special care. During this period, strong dependency behavior was undoubtedly established. When the child recovered, his parents attempted to withdraw some of the attention that they had previously given him. The child responded with intense protests, forcing the

parents to attend to him and thus unwittingly to reinforce crying spells, tantrums, and demands for their extended presence and undivided attention, especially at bedtime. The parents were instructed to put the child to bed in a leisurely and nonpunitive fashion and, after the completion of bedtime routines, to ignore the child's screaming and raging. Under the extinction contingencies an immediate marked drop in the duration of tantrums occurred, followed by almost complete extinction of tantrums within a few days (Figure 6-3). The child no longer cried when left in his room, but instead played happily until he dropped off to sleep.

In everyday situations it is sometimes difficult to achieve generalized extinction of deviant behavior because different social agents are inconsistent in their reinforcement practices. Thus, if parents no longer reward temper

tantrums, but other significant adults continue to do so, a child will, in all likelihood, exhibit a discriminative pattern of negative behavior toward others in accord with their customary reinforcement practices. The rate of extinction can be further impeded if the same agent, through inconsistency in his own actions, places the behavior on a schedule of partial reinforcement. In the case discussed above, for example, the parents and an aunt alternated in the painful bedtime routines. The tantrums were briefly reinstated and reinforced, after having been extinguished, by attention from the aunt on an occasion when the child fussed after having been put to bed. A second extinction series was therefore carried out and resulted in complete and stable elimination of the tantrums (Figure 6-3). Food-throwing and other disruptive behaviors were similarly extinguished by promptly removing the child from the table



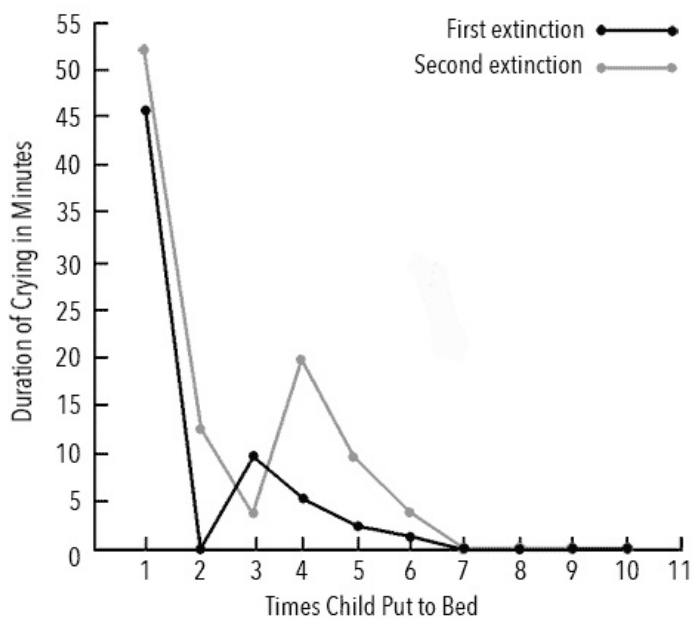


Figure 6-3. Duration of crying in two extinction series in which tantrum behavior was no longer socially reinforced. Williams, 1959.

whenever he deliberately spilled or threw food from his plate. When this practice was first instituted the boy was removed from his high chair 12 times, but thereafter food-throwing declined rapidly and ceased by the seventh meal (Williams, 1962).

A child's aversive control of his parents, if intermittently reinforced, is likely to generalize to other areas of behavior and to other people. As shown by Williams, after inappropriate coercive behaviors are extinguished the familial atmosphere changes from one of recurrent drawn-out battles to reciprocally rewarding interactions.

The importance of establishing uniform contingencies in implementing a change program based on extinction is further shown in a case reported by Ayllon & Michael (1959). A female patient, who exhibited extremely persistent

psychotic talk, had been subjected to considerable verbal abuse and beaten on several occasions by other patients in an effort to keep her quiet. Patients responded negatively to this woman's delusional verbalizations, but the nurses from time to time attended to her bizarre talk in order to "get at the roots of her problems" or responded with perfunctory statements of sympathy and understanding. The patient was thus provided intermittent social reinforcement for behavior that was at other times punished or ignored. The nurses were instructed not to attend to psychotic talk and to reinforce sensible verbalizations. Although the patient's psychotic responses had persisted over the previous three years, during a relatively brief period of treatment the percentage of these responses dropped from 91 to less than 25. However, an increase in psychotic talk occurred during the ninth week of treatment,

when, unknown to the ward personnel, a social worker had been conducting interviews with the patient and inadvertently reinforcing her psychotic verbalizations; the effects of these interviews generalized to the patient's interactions with the nurses and other patients as well. Reinforcements provided by hospital employees and other visitors to the ward produced other temporary increases. However, the psychotic talk still remained less frequent than it had been at the commencement of the extinction program and therefore no longer provoked punitive behavior from the other patients.

A report by Groot (1966) provides some information on the collateral changes that may result from extinction of a related deviant behavior. It also illustrates how, under conditions where treatment practices are supported independently of the consequences they have on

recipients, it is frequently more difficult to modify the practices of the treatment staff than to change the behavior of clients. A chronic schizophrenic, who had received insulin and shock treatment, individual and group therapy, and a lobotomy, engaged continually in psychotic talk and wrote numerous bizarre letters. An extinction program was applied to psychotic talk, and its concomitant effects on bizarre letter writing and incidence of disturbed behavior were measured. When extinction was first instituted, the number of bizarre letters increased from a baseline rate of approximately 13 letters a week to 43 letters in two days, after which it declined and stabilized at about 5 letters a week. The relative frequency of disturbed behavior also decreased from 71 percent during the baseline period to only 16 percent when the extinction program was in effect. Both disturbed behaviors and the number

of psychotic letters increased after the staff reverted to their own preferred practices, whereas deviant performances diminished when the nurses were again persuaded to withhold attention from psychotic verbalizations.

As part of a program of research in the development of procedures for the modification of psychotic behavior, Ayllon and his associates (Ayllon & Haughton, 1962; Ayllon & Michael, 1959) provide numerous examples in which deviant behavior of hospitalized psychotics is extinguished by withdrawal of its positively reinforcing consequences. In one study (Ayllon & Haughton, 1962), a group of schizophrenics, who exhibited severe eating problems of long standing, remained totally unresponsive to announcements that meals were being served and to other persuasive appeals. Consequently, the patients had been individually escorted to the dining room

by ward personnel, spoon-fed, tube-fed, and subjected to electroshock “therapy” and other forms of infantilizing and punitive treatments.

It was assumed by the research staff that the nurses’ inadvertent social reinforcement in the form of coaxing, persuading, and feeding the patients maintained their eating problems, a contingency that also served to reduce the controlling function of verbal stimuli. All social reinforcement for ignoring the announcement of mealtime and refusals to eat was therefore withdrawn; following meal call, the dining room remained open for 30 minutes and any patient who failed to appear unassisted during that time simply missed his meal. Under this new reinforcement contingency, patients responded promptly to meal call and the chronic feeding problems were completely eliminated.

It is interesting to note that delusional statements to the effect that the food was poisoned, or that God had instructed the patients to refuse to eat, dropped out soon after they began to feed themselves (Ayllon & Michael, 1959). These findings suggest that in some cases delusional responses may be a product, rather than a source, of deviant behavior. By adopting a sick role, supported by delusional justifications, patients can be more successful in forcing attending and caretaking responses from busy ward personnel, who would otherwise reject inappropriate demands for personalized attention. Indeed, the nurses frequently encouraged and positively reinforced infantile response patterns on the assumption that the patients were incapable of more mature reality-oriented behavior because they were “mentally ill.” The changes noted in delusional beliefs following the



reinstatement of self-feeding are in accord with considerable research evidence from social psychological studies which demonstrates that after a response pattern has been durably modified, cognition appears to accommodate over time to support or to justify the new behavior.

Similar extinction procedures were applied by Ayllon & Haughton (1964) in modifying aberrant verbal repertoires in three females diagnosed as chronic schizophrenics. In each case, following a baseline period of observation, the deviant verbal behavior was extinguished by withholding social attention and tangible rewards whenever the patients engaged in either psychotic talk or psychosomatic complaints. At such times the nurses and ward attendants appeared distracted, bored, or would simply shift their attention to some other event taking place in the ward. In order to demonstrate that the changes observed

during the extinction period were not due to some other variables, the deviant verbalizations were positively reinforced in the second stage of the experiment, following which extinction contingencies were again reinstated.

Figure 6-4 shows the modification of delusional talk in a patient whose conversational content over the preceding 14 years had been dominated by regal self-references (e.g., "I'm the Queen. The Queen wants a smoke. . . . How's King George, have you seen him?"). The findings provide striking evidence that the staff's social attention exercised considerable control over the client's aberrant verbal behavior. Psychotic verbal responses were progressively increased as a function of positive reinforcement, but they decreased rapidly when social attention was withdrawn. The frequency of appropriate verbal responses was similarly decreased or increased by

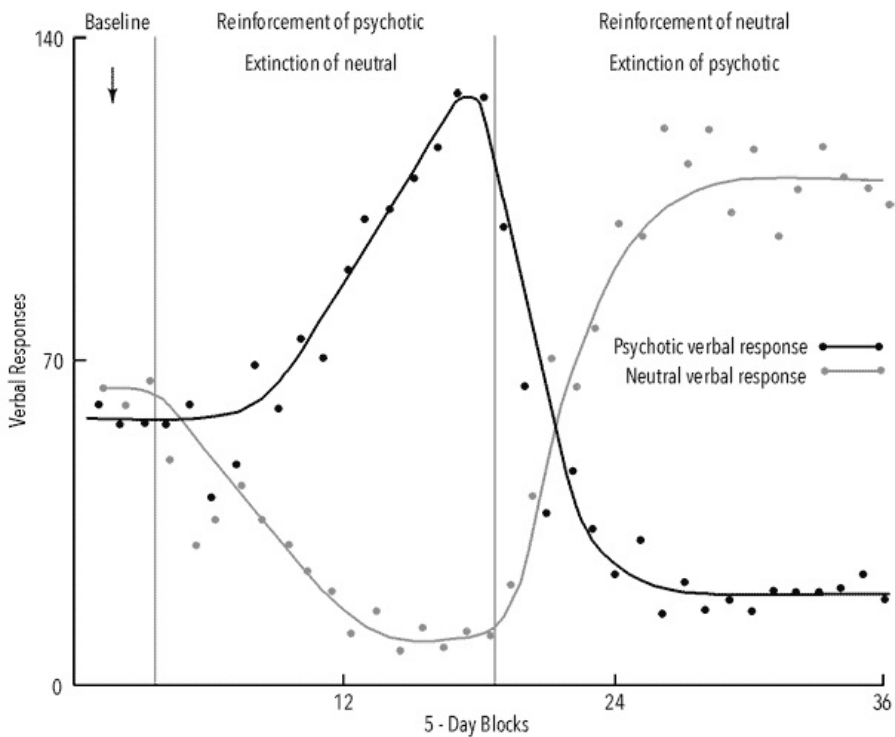


Figure 6-4. Reversals in the incidence of psychotic and neutral verbal behavior as a result of variations in social reinforcement of these two classes of verbalizations. Ayllon & Haughton, 1964.

altering the reinforcement contingencies.

Figures 6-5 and 6-6 illustrate the modification of somatic complaint behavior in two women who continually alleged innumerable physical symptoms in the absence of any organic dysfunction. Their somatic preoccupation and accompanying emotional responses such as crying and sobbing were drastically reduced when they were no longer consoled, or given sympathy or attention for complaints of various aches and pains. The extinction process was undoubtedly hastened in the latter case by the concurrent positive reinforcement of more appropriate verbal responsiveness.

As shown in the studies of Ayllon and his colleagues, institutional environments that are lacking in positive social reinforcement are likely to produce a high incidence of attention-

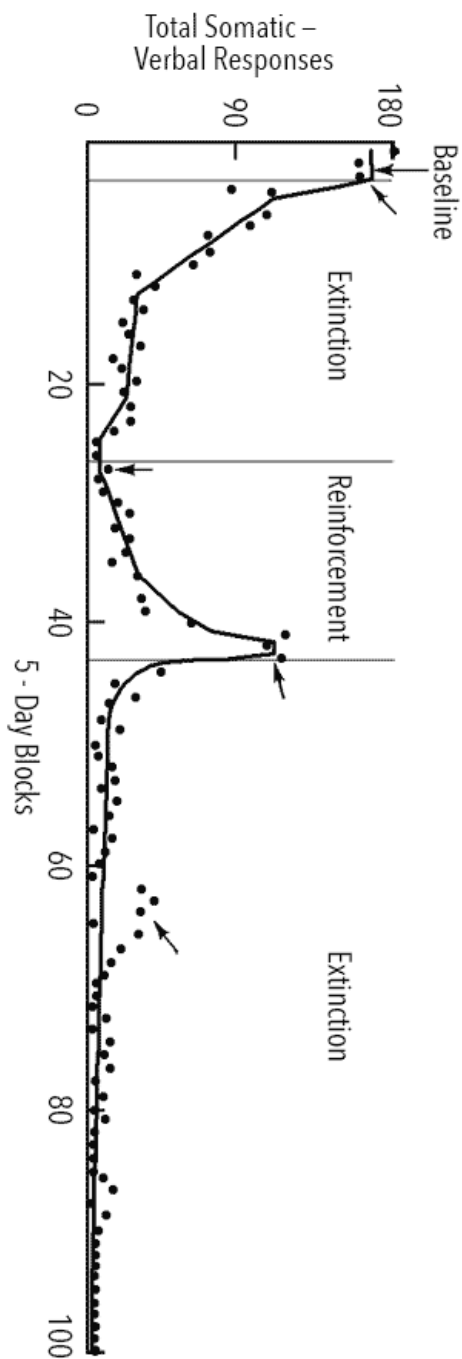


Figure 6-5. Frequency of somatic complaints during the baseline period and while somatic verbalizations were successively rewarded with attention and ignored. The temporary increase in somatic complaints shown by the arrow in the fourth phase of the treatment coincides with a visit by a relative. Ayllon & Haughton, 1964.

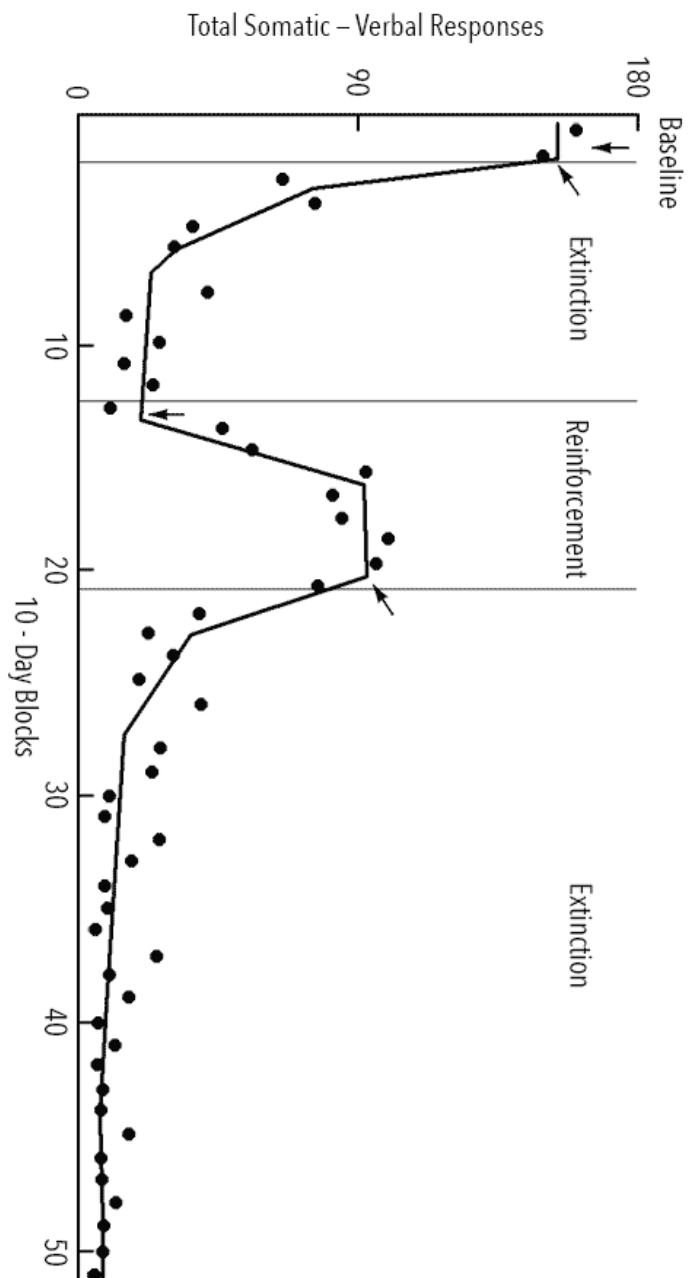


Figure 6-6. Frequency of somatic complaints during the baseline period and while somatic verbalizations were successively rewarded with attention and ignored. Ayllon & Haughton, 1964.

compelling deviant behavior. In those familial environments that likewise provide minimal social reinforcement, interest and attention may be supplied primarily for somatic disturbances or psychological disorders that cannot be easily ignored. Walton (1960a), for example, reports a case of a 20-year-old woman who suffered from long-standing neurodermatitis on the back of her neck, which was continuously aggravated by persistent scratching. The client had undergone numerous medical treatments, including ointments, pills, lotions, and x-ray therapy, but her skin condition remained essentially unchanged. Assessment of the family interrelationships revealed that the son, who had always enjoyed a preferred status, was currently receiving most of the parental attention and their limited financial resources, whereas the daughter had been relegated to an inferior, ignored position. With the

advent of the dermatitis, however, the daughter received more solicitous attention than ever before, and her fiancé, who similarly expressed concern over the dermatitis, frequently assisted with the application of the prescribed ointments.

On the assumption that the scratching behavior, which perpetuated the skin condition, was being inadvertently reinforced by the high level of attention, the family members were instructed to ignore the dermatitis and the fiancé to discontinue the ointment routine. Following discontinuance of the solicitous ministrations, the scratching decreased and at the end of three months the dermatitis had completely disappeared. A four- year follow-up study disclosed no recurrence of the neurodermatitis; the client was happily married and successfully employed. Walton attributes the elimination of compulsive scratching to the rapid accumulation



of inhibitory potential with nonreinforced performance and the eventual selection of less effortful means of securing attention. A more likely explanation would be in terms of clients' discriminating the altered reinforcement contingencies rather than the build-up of response-produced inhibitory potentials.

In the above case a somatic disorder was indirectly perpetuated through reinforced motor behavior that exacerbated the condition. An ingenious program of research by Miller (1969) provides impressive evidence that physiological responses involved in psychosomatic conditions can be directly modified by contingent reinforcement. In these studies animals are curarized to eliminate skeletally mediated influences, and spontaneous physiological responding is altered by administering reinforcing consequences whenever visceral responses of a

selected rate or magnitude occur. The animals are typically reinforced by rewarding brain stimulation or by the cessation of electric shock. Results of numerous experiments consistently show that when increases or decreases in physiological responding are reinforced, visceral changes are produced in the rewarded direction. A wide variety of visceral responses, including changes in heart rate, blood pressure, vasomotor activity, intestinal contractions, and rate of urine formation, have been substantially modified by this procedure. The preciseness of reinforcement control of visceral responses is most strikingly illustrated by an experiment (Di Cara & Miller, 1968) in which animals were rewarded for relatively greater vasomotor responses in one ear than in the other. The animals learned to respond with differential vasomotor activity in the two ears, indicating much greater specificity to

autonomic functioning than has been previously assumed.

Based on the evidence that visceral responses are subject to reinforcement control, Miller (1969) speculates that psychosomatic conditions may be partly developed through contingent attention and other reinforcing consequences. If this is the case, it should be possible to modify the visceral responses involved in psychosomatic disorders by the use of extinction and differential reinforcement procedures.

### *TEMPORAL COURSE OF EXTINCTION*

When reinforcement for previously rewarded behavior is discontinued, the subject is likely to exhibit, during initial phases of extinction, a temporary acceleration or intensification of the behavior in an effort to produce the customary reinforcement. This is particularly true of

performances that have been maintained on a continuous schedule of reinforcement. A temper tantrum that continues to go unheeded will typically soar to deafening intensities; initially mild dependency demands, if disregarded, may culminate in a sharp kick in the shins; and negative attention-getting behavior that is consistently ignored typically assumes increasingly ludicrous forms. But if the more vigorous responding also proves unsuccessful, it gradually declines and alternative patterns of behavior emerge.

The particular sequences and patterns of responses that appear during later phases of extinction are primarily determined by the response options available to the individual. As dominant modes of behavior are extinguished, a person will try alternative courses of action that have been successful on previous occasions in

similar situations. No special problems are created by the use of extinction alone, provided the available alternatives are desirable. If, however, the responses in the individual's repertoire are largely inadequate, a change agent may be faced with the arduous task of extinguishing a long succession of inappropriate patterns of behavior. This problem can be easily avoided by combining extinction procedures with methods that foster more effective modes of response.

The simultaneous utilization of extinction and reinforcement procedures is illustrated by one of several studies (Allen, Hart, Buell, Harris, & Wolf, 1964) designed to modify behavior disorders in young children on the basis of reinforcement principles. The case involved a preschool girl who exhibited marked passivity and withdrawal from peer interactions, and high dependence on adults, which generally took the form of hypochondriacal

complaints, drawing attention to collections of incidental objects, and to simple stereotyped activities that might gain and hold adult interest. Most of the time, however, she spent either standing alone, or sitting in packing boxes, despite her teachers' supportive efforts to structure play activities for her with a group of accepting children. These attempts were partly unsuccessful because the teacher would leave soon after the girl became involved in the group, thus making the loss of the teacher contingent upon social participation. Before long she would be standing on the periphery, seeking out a teacher, or reverting to some form of solitary activity. In addition to the autistic behavior, the girl displayed speech defects and a variety of tic-like behaviors.

In order to increase her social responsiveness, isolate behavior was consistently nonrewarded and she was given a minimum of attention for

adult contacts that competed with peer-group play. Attention was, however, given freely and warmly whenever she approached or interacted with peers. Initially, because of her strong avoidance behavior, approximations to social interactions, such as standing near other children or parallel play, were positively reinforced. A teacher would go to her whenever she was in the proximity of peers, converse with her, comment on the nearby play activity, and suggest ways of joining in the game. Later, adult attention, approval, and closeness were made contingent upon direct play with other children. The introduction of these new contingencies produced a rapid and marked change in the girl's social behavior: peer interactions increased from approximately 10 to about 60 percent, while adult contacts dropped from 40 to less than 20 percent (Figure 6-7).

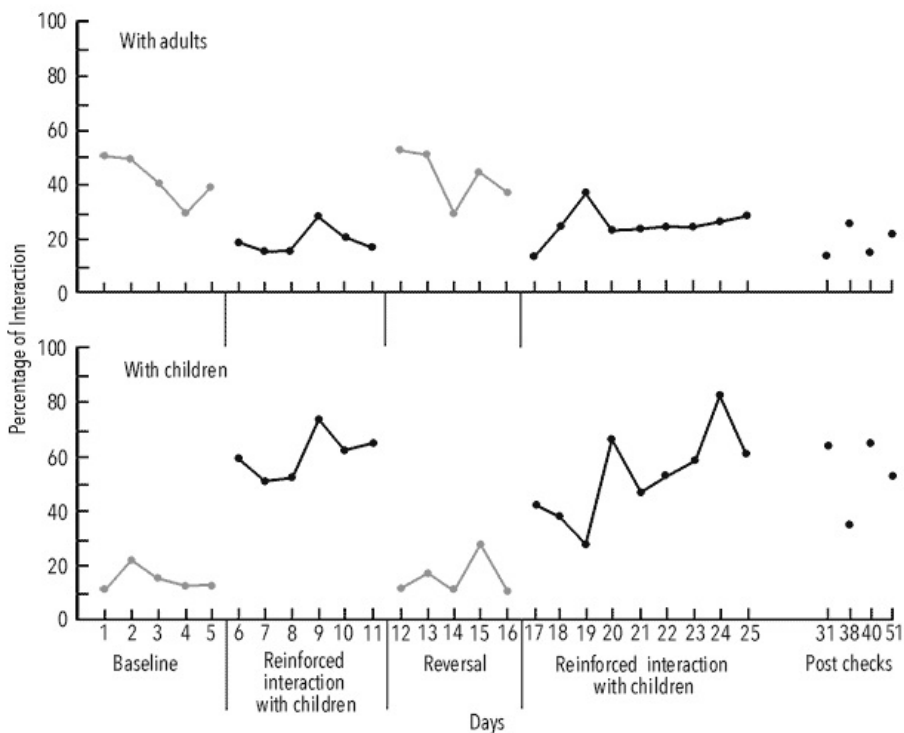


Figure 6-7. Amount of social behavior displayed by a child as a result of variations in social reinforcement of adult and peer interactions. Allen et al., 1964.



In order to determine whether the differential reinforcement was the determinant of the behavioral changes, the original contingencies were reinstated. During this period the teachers gave full attention to the girl when she contacted them, played with her when she was alone, watched her when she engaged in solitary activities, and conversed with her as long as she remained in close proximity. No attempts were made, however, to initiate or to reward social interaction with peers. Under these conditions, the girl's contacts with adults increased, the hypochondriacal complaints and articulation problems reappeared, and she promptly reverted to the isolate pattern of behavior (Figure 6-7). Several days after the therapeutic contingencies were again instituted, the girl's contacts with adults stabilized at about 25 percent, and social interactions with peers increased to the previous

level of about 60 percent.

As play activities and peers became increasingly enjoyable, adult rewards for interaction with children were progressively diminished, and the schedule of nonreinforcement of adult contacts gradually relaxed. At the end of the 10-day period, the program was discontinued and no special contingencies were arranged thereafter. Observational studies conducted during several periods following treatment revealed that the girl continued to display a high level of social interaction with other children (Figure 6-7). Not only was the isolated pattern of behavior successfully modified, but her speech, which had been slow, drawn-out, and frequently inaudible, improved considerably. She no longer demanded unnecessary medication, and she displayed increased capabilities to assert and defend herself when necessary.

Similar results were obtained with a combined extinction-reinforcement procedure in the treatment of two preschool boys who exhibited frequent crying episodes whenever mildly frustrated or thwarted by other children (Hart, Allen, Buell, Harris, & Wolf, 1964). Observation revealed that their vociferous crying generally elicited comforting ministrations and solicitous concern from teachers. Consequently, teachers were instructed to pay no attention to the crying episodes, unless the child was actually hurt. If he was in close proximity to the teacher when he began to cry, she walked away or occupied herself with other duties. On the other hand, whenever that child handled stressful situations more constructively he received prompt approving attention. Within five days after introduction of the new contingencies the rate of crying declined from 5-10 times per morning to practically a zero

level and remained negligible thereafter. Etzel & Gewirtz (1967) achieved equally favorable results with persistent infant criers by combining extinction of crying with reinforcement of more cheerful behavior.

As revealed by the above studies, modification of behavior through extinction can be accomplished quickly and predictably by eliciting and reinforcing desirable modes of response in addition to eliminating the rewarding consequences for dysfunctional behavior. Some of the emotional effects that accompany extinction can also be avoided in this manner. If, however, constructive alternatives are only weakly established or nonexistent in an individual's behavioral repertoire, a change agent may have to wait unnecessarily long or indefinitely for their appearance. Under these conditions, rather than relying on the fortuitous occurrence of favorable

events, a change agent can both facilitate and more effectively control the course of treatment by providing rewarded models who display alternative means for securing desired outcomes. Individuals undergoing extinction alone may learn what is no longer effective but remain uncertain about possible constructive courses of action, whereas the combined use of extinction and modeling provides considerable positive guidance.

#### *MODIFICATION OF AGGRESSIVE RESPONSE PATTERNS*

Theorizing about the conditions governing the occurrence and modification of aggressive behavior has, until recent years, been considerably influenced by the frustration-aggression hypothesis (Berkowitz, 1962; Dollard, Miller, Doob, Mowrer, & Sears, 1939). According to this view, aggression is the naturally dominant response to frustration, and nonaggressive

reactions are likely to occur only if aggression has been nonrewarded or punished. Since aggression was considered an unlearned response to frustration, the research stimulated by this theory was mainly concerned with the effects of frustration on aggression, with its inhibition and displacement, and with the occurrence of catharsis. On the other hand, the crucial issues of how relatively complex patterns of aggressive behavior are originally learned, and the influence of a variety of controlling variables other than "frustration" were largely ignored.

Man is endowed with neurophysiological mechanisms that enable him to behave aggressively, but the activation of these mechanisms depends on stimulation and is subject to cortical control. Therefore, the frequency with which aggressive behavior is displayed, the specific forms that it takes, the situations in which

it is expressed, and the targets that are selected for attack are strongly influenced by social experience. A social-learning theory of aggression distinguishes the acquisition of instrumental responses that have destructive or pain-producing potential from the conditions governing their subsequent performance. Aggressive response patterns are characteristically acquired under nonfrustrating conditions in the absence of injurious intent and often toward inanimate objects. Thus, for example, military recruits acquire and perfect combat skills through many hours of target practice and simulated skirmishes; boxers develop hurtful pummeling abilities by using punching bags and sparring partners whom they do not necessarily intend to hurt; and hunters acquire the basic rudiments of hunting by shooting at inanimate targets before they go out in search of game. Indeed, if aggressive

repertoires were taught only while individuals were hostilely aroused and entertained injurious designs, many of the tutors and learners would probably be maimed during the acquisition phase. Most theories of aggression single out a limited set of variables that may influence performance of aggressive responses, but for the most part they overlook the essential skill component.

The process of acquisition and subsequent utilization of aggressive behavior is best exemplified in laboratory studies employing markedly different training and test situations. Walters & Brown (1963) showed that boys who had been intermittently reinforced with marbles for punching an automated Bobo doll later exhibited more physically aggressive behavior toward other children in a competitive situation than did boys who had received no prior training in punching responses. Conversely, in the



previously reviewed study by Chittenden (1942), children whose aggressive responses were reduced in a doll-play situation through differential modeling and vicarious reinforcement were much less prone to respond aggressively to interpersonal thwarting, both in situational tests and in their everyday interactions.

There is a substantial body of evidence (Bandura & Walters, 1963) that novel modes of aggressive behavior are readily acquired through observation of aggressive models. Findings of these controlled investigations lend support to field studies demonstrating the crucial role of modeling in the genesis of antisocial aggressive behavior (McCord & McCord, 1958), and in the cultural transmission of aggressive response patterns (Bateson, 1936; Whiting, 1941). Modeling influences continue to regulate aggressive responsiveness to some extent even after the

behavior has been acquired. The behavior of models continually exerts selective control over the types of responses exhibited by others in any given situation. Moreover, seeing individuals behaving aggressively without adverse consequences reduces restraints in observers, thereby increasing both the frequency with which they engage in aggressive activities (Wheeler, 1966) and the harshness with which they treat others (Epstein, 1966; Hartmann, 1969).

After aggressive patterns of behavior have been learned, they can be maintained by a variety of reinforcing events. Theories that invoke aggressive drives (Dollard et al., 1939; Feshbach, 1964) assume that pain cues and other injurious consequences experienced by the victim constitute the major reinforcers of aggressive behavior. The process whereby signs of injury and distress acquire positively reinforcing properties has never

been established. Sears, Maccoby, & Levin (1957) suggest that expressions of pain and discomfort produced in others by aggressive behavior are frequently followed by removal of frustrations or rewarding outcomes for the aggressor. Through such paired association pain cues acquire conditioned reward value. One might also expect expressions of suffering to gain satisfying properties under conditions of interdependent competing consequences in which success for one member produces punishing outcomes for the other. Feshbach (1964) offers a somewhat different interpretation of the phenomenon. Through example and precept children learn a retaliation norm: infliction of injury requires that the initial aggressor must be hurt. It is further assumed that perception of pain in one's tormentors is experienced as satisfying because successful retaliation restores self-esteem.

To assess the reinforcing function of infliction of pain, Feshbach, Stiles, & Bitter (1967) conducted an experiment in which female students participated in a verbal-conditioning task after being treated in either a hostile or a friendly manner by a confederate of the experimenter. For half the subjects in each condition the correct verbal response was reinforced by witnessing the confederate being shocked, while for the remaining students the contingent event was a light flash. Angered subjects who observed the provocateur experiencing pain showed an increase in conditioned responses, but the noninsulted subjects did not. These findings would seem to indicate that under anger arousal pain cues can serve as positive reinforcers, although additional information is needed before the conditioning differences can be unequivocally attributed to the influence of anger arousal.

Witnessing another person experience pain evokes emotional responses (Berger, 1962), and observers who are moderately aroused are more easily conditioned by such displays than nonaroused subjects (Bandura & Rosenthal, 1966). Since emotional arousal facilitates conditioning, an experimental design comparing the effects of pain cues on fear-aroused and anger-aroused subjects would be best suited for evaluating whether conditioning outcomes are due specifically to anger or to the general effects of emotional arousal.

A comprehensive theory of aggression must account not only for aggressive actions that are primarily reinforced by injurious consequences, but also for much broader classes of aggressive behavior in which the infliction of injury is essentially irrelevant or, at best, a secondary controlling condition. If there is any validity to

naturalistic studies demonstrating that social recognition is often made contingent upon performance of assaultive behavior, and if aggression is defined as behavior intended to produce injurious consequences, then some of the most violent interpersonal activities would be excluded from consideration. It is evident that people frequently resort to aggression not for pain cues but because it has high utilitarian value. By aggressive behavior, or dominance through physical and verbal force, individuals can obtain material resources, change rules to fit their own wishes, gain control over and extract subservience from others, terminate provocation, and remove physical barriers which block or delay attainment of desired outcomes. It is, therefore, not surprising that aggressive-domineering patterns of behavior are so prevalent.

Systematic analysis of reinforcement

contingencies in naturally occurring interactions, indeed, reveals that aggressive behavior is strengthened and maintained to some extent by its positive social consequences. In deviant subcultures, where physical aggression is regarded as emulative behavior (Buehler, Patterson, & Furniss, 1966; Wolfgang & Ferracuti, 1967; Yablonsky, 1962) aggressiveness is often deliberately rewarded and collectively sanctioned. Studies of aggression as it occurs in familial and other social situations disclose that individuals are often inadvertently trained to behave aggressively by persons who normally eschew such behavior. Because of its aversive properties aggressive behavior not only commands attention, but is often successful in removing unpleasant performance demands and in controlling the behavior of others. Both parents (Hawkins, Peterson, Schweid, & Bijou, 1966) and peers

(Patterson, Littman, & Bricker, 1967) thus intermittently reinforce aggressive responding.

A similar reinforcement process is typically operative at broader social levels. When legitimate demands and constructive efforts to produce needed changes are repeatedly thwarted by persons who benefit from the prevailing system this evokes more intense and disruptive actions that cannot be ignored. In many instances, existing practices lack sufficient justification to withstand any concerted and aggressive efforts to force changes. As a consequence, aggressive behavior eventually succeeds in securing desired goals and, like any other efficacious, modeled behavior, it is widely emulated as a method of achieving social change.

Drive theories of aggression assume that frustration arouses an aggressive impulse or drive



that can be reduced only through some form of aggressive behavior. From a social-learning perspective, frustration is regarded as a facilitative rather than a necessary condition for aggression. That is, frustration produces a general state of emotional arousal that may lead to a variety of responses depending upon the types of frustration reactions that have been previously learned, and the reinforcing consequences typically associated with different courses of action. This conceptualization is supported by several lines of evidence.

Psychophysiological studies, some of which are discussed in Chapter 8, demonstrate that fear-arousing and anger-provoking situations produce highly similar physiological arousal (Ax, 1953; Schachter, 1957). Moreover, the same state of physiological arousal induced directly by a sympathetic stimulant may be experienced as

anger or euphoria depending upon the type of emotional behavior exhibited by others in the same situation (Schachter & Singer, 1962). These data question the assumption that frustration creates a distinct form of emotional arousal that can be reduced only through aggressive behavior. Indeed, contrary to aggressive drive theory, findings of numerous controlled experiments reveal that far from producing a cathartic reduction of aggression, performance of aggressive behavior within a permissive setting maintains it at its original level (Feshbach, 1956; Kenny, 1952; Mallick & McCandless, 1966). It has also been shown repeatedly that vicarious participation in aggressive activities increases the probability that observers will behave in an aggressive fashion (Bandura, 1965; Berkowitz, 1969).

The persistence of emotional frustration

effects may be more adequately interpreted in terms of a self-arousal mechanism rather than as a lingering aggressive drive requiring discharge through assaultive or destructive behavior. After a person has been insulted, unjustly treated, or otherwise thwarted, the resultant emotional arousal is repeatedly revived and often enhanced on later occasions through symbolic reinstatement of the anger-provoking incidents. Thus thinking about the ill treatment and the possible adverse consequences of disturbing episodes can reinstate intense feelings long after the initial reactions to the situation have subsided. The persistence of elevated arousal, according to the social-learning view, is attributed to self-generated stimulation rather than to the existence of an undischarged reservoir of aggressive drive. If the person should become immersed in new activities that supersede the arousing ruminations,

or if he should reinterpret the original provoking experience in a more favorable light, then “tension” is likely to be reduced noticeably. For example, a person who is angered over a presumed snub will probably experience a rapid and thorough reduction in anger arousal, without having to assault someone, upon learning that he has been invited to the social function after all. Similarly, on the supposition that diminution of emotional arousal is a consequence of changes in symbolic activities rather than a cathartic effect of having experienced aggression vicariously, one would expect aroused individuals to experience equally salutary effects from getting involved in an absorbing book, a movie, a stage play, or a television program lacking aggressive displays.

Results of several experiments, differing considerably in subject characteristics, in the form in which aggression is expressed, and in

dependent measures, are in general agreement with the foregoing theoretical considerations. Kahn (1966) subjected college students to anger-arousing experiences, after which they either expressed their feelings of anger to an encouraging and sympathetic "physician," or they merely sat for an equivalent period. Students who participated in the cathartic interview disliked the provocateur significantly more than the controls, and during the recovery period, the catharted subjects were generally more aroused physiologically than students in the control condition. In an experiment conducted with children, Mallick & McCandless (1966) found that reinterpretation of the anger-eliciting events substantially reduced aggressive behavior toward the antagonist, whereas free expression of physical aggression did not lessen their punitive behavior. Kaufmann & Feshbach (1963a, b)

provide further suggestive evidence for the anger-mitigating effects of cognitive processes.

The term frustration has been applied to exceedingly diverse conditions including the obstruction, omission, or delay of reinforcement, the withdrawal of rewards, and the administration of punishing stimuli. It has been demonstrated in research involving both human and animal subjects that these operations produce quite different outcomes, and even the same condition does not have an invariant behavioral effect. The manner in which individuals respond to conditions regarded as frustrative is primarily determined by the patterns of behavior that they have previously learned for coping with such situations.

The importance of direct training in the development of frustration responses is

demonstrated in an experiment by Davitz (1952). After first being observed in free interaction, several groups of children participated in training sessions in which competitive and aggressive behaviors were praised and encouraged. In contrast, other groups of children were rewarded for constructive and cooperative behavior. All children were then severely frustrated and immediately following this experience they were observed for a second time in free interaction. Children who had been trained to behave aggressively showed an increase in aggression, whereas children who had received training in cooperativeness behaved more constructively in response to frustration. This study illustrates how frustration serves as an arousal stimulus that enhances whatever responses are dominant in subjects' behavioral repertoires.

The influential role played by social-learning

factors in aggression is further shown by studies in which aggressive behavior is induced in primates through electrical stimulation of the hypothalamus (Delgado, 1967). Thalamic stimulation of a monkey who assumes a dominant role in the colony instigates him to attack subordinate male members. By contrast, thalamic stimulation elicits cowering and submissive behavior in a monkey of low social rank. Even more impressive is evidence that electrical stimulation of the same cerebral mechanism can evoke differential amounts of aggression in the same animal as his social rank is modified by changing the membership of the colony. Thus, thalamic stimulation elicits submissiveness in the animal when he occupies a low hierarchical position and marked aggressiveness when he is the dominant member in the group.

In human learning, responses to frustration



frequently originate from observation of parental and other models who provide repeated examples of how to deal with thwarting events. Consequently, when observers encounter stressful situations they are more likely to respond imitatively than to engage in initial trial-and-error behavior. Only when a person has learned aggression as a dominant response to emotional arousal will there be a high probability of his reacting aggressively to frustration. For example, Bandura (1962) found that children who had observed a model behaving in an aggressive manner responded to frustration with kicking, striking with mallets, and other imitative aggressive responses, while equally frustrated children who had watched a nonaggressive model displayed less aggression than a control group that matched the inhibited behavior of their model. The influential role of modeling in shaping

frustration or stress reactions is well documented in countless studies showing that deviant behavior patterns are often transmitted through familial modeling.

It is evident that, as a result of differential modeling and reinforcement patterns, frustration may elicit a wide variety of responses. When thwarted, some people become dependent and seek help and support, some display withdrawal and resignation, some experience psychosomatic dysfunctions, some seek refuge in drug-induced experiences and anaesthetic doses of alcohol, some respond aggressively, and most simply intensify constructive efforts to overcome the obstacles they face. It therefore comes as no surprise that in laboratory studies in which frustration is systematically varied it sometimes increases aggression (Berkowitz, 1964; Geen, 1968; Hartmann, 1969), has no effect on

aggressive behavior (Buss, 1966; Jegard & Walters, 1960; Walters & Brown, 1963), or reduces aggressive responding (Kuhn, Madsen, & Becker, 1967). In experiments reporting positive results frustration usually exerts an influence only in conjunction with prior training in aggression or exposure to aggressive modeling cues. The fact that the negative findings occurred in studies in which other variables were highly influential lends support to the view that frustration is only one, but not necessarily the most important, variable determining aggressive behavior. Indeed, according to social-learning theory, one could readily produce highly aggressive individuals by providing them with successful aggressive models and intermittently rewarding aggressive behavior, while keeping frustration at a low level. It would follow from the findings reviewed in the preceding sections that lasting changes in aggressive

behavior can be most successfully achieved by reducing the utilitarian value of aggression through the development of more effective alternative modes of response.

A variety of social-learning procedures has been employed with success in modifying extreme aggressive behavior. Chittenden (1942) achieved reductions in aggression by modeling more constructive means of coping with interpersonal conflicts. Several investigators (Hawkins et al., 1966; Sloane, Johnston, & Bijou, 1968; Zeilberger, Sampen, & Sloane, 1968) have eliminated violent temper tantrums and physically assaultive behavior by reducing the amount of social reinforcement that parents and teachers provide for such behavior. In the foregoing programs aversive consequences, usually consisting of social withdrawal, are administered for physical assault and destructive behavior, and desirable social

behavior is actively promoted.

Aggression has also been effectively modified by differential social reinforcement in which aggressive behavior is placed on an extinction schedule. Brown & Elliott (1965) instructed teachers to ignore aggression and reward cooperative behavior in an effort to reduce the amount of aggression exhibited by 27 boys in a nursery school class. Under these reinforcement contingencies the incidence of both physical and verbal aggression declined. After the program was discontinued physically aggressive behavior showed some recovery during a follow-up period, which was attributed to the fact that teachers found it difficult not to attend to and interact with the boys when they engaged in such activities. The social reinforcement procedures were again consistently applied and produced additional reductions in physical and verbal assaults. Scott,

Burton, & Yarrow (1967) report similar results in a controlled study of a nursery school boy who displayed frequent unprovoked aggression. When the usual conditions of adult reinforcement were in effect the boy exhibited a high rate of negative behavior toward peers. In contrast, during periods when significant adults consistently ignored aggressive actions and concurrently attended to desired behavior the boy showed a substantial increase in positive forms of interaction with other children.

### **Extinction of Defensive Behavior**

As Mowrer (1950) has previously noted, human behavior is frequently activated not by immediate physical discomforts but by anticipated aversive effects. That is, housewives do not depend upon hunger pangs to prompt them to purchase groceries; homeowners do not wait until

they experience the discomfort of a burning house to buy fire insurance; students ordinarily do not rely upon distress created by examination failures to begin to study; and usually motorists do not wait until inconvenienced by a stalled automobile to replenish gasoline. Through representational mechanisms future events can be converted into current stimuli that are functionally similar to physical stimuli in their capacity to evoke adaptive courses of action.

Similarly, avoidance behavior can be strongly reinforced by its success in preventing the occurrence of anticipated painful experiences. This process is illustrated by the apocryphal case report of a severe compulsive who, when asked by a psychiatrist why he incessantly snapped his fingers, replied that it kept ferocious lions away. When informed that there were no lions in the vicinity, the compulsive client responded, "See, it

works.” The reality of the phenomenon is most strikingly demonstrated by laboratory studies of unsignaled avoidance in which animals can forestall shock for a fixed period each time they perform a defensive response (Sidman, 1966). Under these conditions animals display a stable rate of avoidance behavior and, as a result, they rarely encounter the actual punishing events. Moreover, the avoidance behavior persists for a long time after aversive stimuli have been withdrawn, and it is easily reinstated on later occasions by a few negative experiences.

After successful avoidance behavior has been developed it may be controlled cognitively and by discriminative stimuli without requiring emotional arousal. In a comparison of different extinction procedures, Notterman, Schoenfeld, & Bersh (1952) conditioned heart-rate responses to a tone through shock stimulation. When the



extinction trials began one group of subjects was presented the tone without comment, the second group was informed that the shocks had been permanently discontinued, while the third group was told that they could successfully avoid being shocked by tapping a telegraph key whenever the tone was presented. Awareness of the altered contingencies facilitated extinction, but autonomic responding was almost completely eliminated when subjects had a suitable means of avoiding aversive stimulation (Figure 6-8).

Under naturally occurring conditions individuals periodically encounter punishing experiences and frequently find themselves in fear-provoking situations. Defensive activities are, therefore, reinforced not only by forestallment of potential threats but also by fear reduction accompanying escape from aversive situations that produce disturbing arousal. In experiments

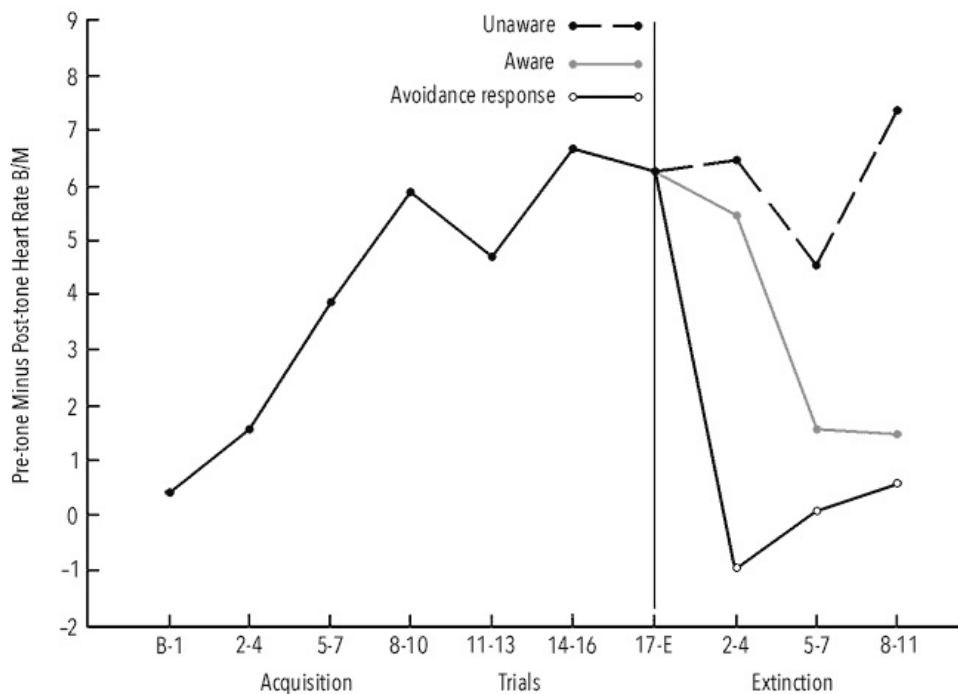


Figure 6-8. Extinction of heart-rate responses to a conditioned stimulus in subjects who either were uninformed that shock was discontinued, were told there would be no further shocks, or were provided with a motor response for avoiding shock. B-1 represents the baseline heart-rate response to the tone before aversive conditioning. Redrawn from Notterman, Schoenfeld, & Bersh, 1952.

designed to evaluate separately the various factors that might reinforce avoidance behavior, Kamin (1956, 1957) found that either termination of the fear-provoking signal or avoidance of physically painful stimulation increased the frequency of avoidance responses and the speed with which they were performed. Avoidance behavior was most pronounced when it both terminated fear-arousing cues and prevented shock stimulation.

Extinction of avoidance behavior is achieved by repeated exposure to threatening events without the occurrence of any adverse consequences. The major obstacle to obtaining rapid extinction is the self-reinforcing character of avoidant behavior deriving from its capacity to remove or postpone anticipated threat. Moreover, inhibition of responses that have been punished in the past and the successful avoidance of fear-provoking situations effectively prevent the

individual from reappraising the currently prevailing conditions of reinforcement. Anticipatory arousal and defensive behaviors that are no longer objectively justified are thus protected from extinction. Continued reexposure to fear-producing stimuli without unfavorable consequences eventually eliminates both emotional and instrumental behavior through mechanisms previously discussed. Several variant extinction procedures have been devised in an effort to accelerate and to gain better control over extinction processes.

#### *FORCED EXPOSURE THROUGH RESPONSE PREVENTION*

Avoidance behavior can be rapidly eliminated by blocking its occurrence in the presence of fear-arousing stimuli. However, there is some evidence to indicate that forced exposure may produce only temporary changes without altering the arousal

potential of subjectively threatening situations. In some instances, for example, cessation of avoidance responding simply reflects the formation of erroneous discriminations that protect the fear-eliciting capacity of threatening stimuli from extinction. Solomon, Kamin, & Wynne (1953) trained dogs to jump over a barrier in a shuttle box whenever a buzzer was sounded preceding an intense electric shock. After the avoidance behavior was well learned, extinction was instituted. Under the regular extinction procedure, the animals continued to perform the effortful avoidance response to the buzzer with undiminished speed for several hundred trials without receiving a further shock. At this stage of the investigation, various modification procedures were introduced. For some animals, a glass barrier, which prevented the jumping response, was placed between compartments of the shuttle

box, but this method also proved ineffective in facilitating extinction for most animals. In this experiment, the physical obstruction was utilized only on the fourth and seventh of the ten trials which the dogs received during each daily session. Under these predictable stimulus changes the animals apparently discriminated between trials on which the barrier was present as being safe and those on which it was absent as dangerous. Consequently, they continued to jump rapidly on the latter trials, but remained unperturbed by the aversive tone whenever the glass barricade was introduced.

Evidence for the discrimination interpretation of the marked resistance to extinction is provided by Carlson & Black (1959), who replicated the above experiment, with the exception that the glass barrier was employed throughout the initial series of extinction trials, after which it was

permanently removed. Under this procedure, avoidance behavior was rapidly eliminated. Using a similar method, Page & Hall (1953) likewise demonstrated that the response-prevention technique can accelerate extinction, provided it is employed on every trial in a lengthy series during the initial phase of extinction. Weinberger (1965) has further shown that the rate of extinction of avoidance behavior is increased with longer durations of forced exposure to fear-provoking events.

Response blocking in the presence of aversive stimuli can produce behavioral changes through several different means. It may extinguish the aversive properties of threatening stimuli so that they lose their capacity to evoke fear and avoidance. Alternatively, it may eliminate the obstructed avoidance responses without altering the arousal potential of feared stimuli by

producing new forms of defensive behavior that are inevitably successful in forestalling nonexistent threats. This process of response substitution is best exemplified by Miller's (1948) experiment, in which animals confined in a threatening situation acquired a long succession of avoidance responses as each preceding one was obstructed. The importance of distinguishing between changes reflecting stimulus neutralization and response substitution is further illustrated by evidence that subjects that have extinguished avoidance responding to a given CS may nevertheless be somewhat fearful of that stimulus, as measured by suppression of rewarded behavior whenever the stimulus is presented (Kamin, Brimer, & Black, 1963).

Assessments of the varied effects accompanying response prevention suggest that this method may produce rapid behavioral



changes without achieving fear extinction. This is shown by evidence that, compared to regular extinction, behavior that has been eliminated by response blocking reappears with greater frequency to later presentations of the conditioned stimuli (Benline & Simmel, 1967); subjects are more reluctant to approach the fear-provoking cues, indicating that they have retained some of their aversive properties (Page, 1955); and not only are subjects whose defensive behavior has been removed in this manner more susceptible to subsequent aversive conditioning, but the reestablished avoidance behavior is more resistant to extinction (Polin, 1959).

Response-prevention methods have rarely been employed clinically. However, Meyer (1966) presents interesting results with severe obsessional disorders, which suggest that this approach may have value in modifying certain

behavioral conditions. One case involved a 33-year-old woman who was almost totally incapacitated by washing rituals. She phobically avoided touching common objects and discontinued sexual relations because of fear of contamination. Most of her time was spent compulsively washing and scrubbing the house. The second woman suffered for 36 years from intrusive “blasphemous thoughts” that centered around having sexual intercourse with the Holy Spirit. The resultant guilt and anxiety were alleviated by performing various ritualistic behaviors a certain number of times. These obsessive thoughts and rituals remained unaltered by electric shock therapy and a leucotomy but, according to the client, the condition was aggravated by 11 years of psychoanalysis where most stimuli were interpreted as sexual symbols. Consequently she stopped eating oblong objects,

and any activity that could conceivably have sexual connotations (e.g., shutting drawers, putting in plugs, wiping tall receptacles, entering underground trains, etc.) evoked ritualistic behavior.

The clients were requested to perform threatening activities (e.g., touching door knobs, handling dust bins, imagining sexual relations with the Holy Spirit, eating sausages, etc.) and the nursing staff prevented them from engaging in the ritualistic behavior designed to forestall foreboding consequences. The women displayed intense distress when performance of the ritualistic behavior was first blocked. However, their emotional reactions gradually diminished, and both avoidance behavior and the compulsive rituals were substantially reduced after the restrictions had been removed. According to follow-up studies, the first client continued her

washing routines, but she was much less disturbed by dirt, her family relationships improved greatly, she resumed sexual relations, and she was able to participate in a number of social activities which she previously had avoided for fear of contamination. The second client decreased the ritualistic behaviors from approximately 80 to 4 per day and the occurrence of intrusive thoughts was similarly reduced. These encouraging preliminary results suggest that avoidance behavior that is powerfully maintained by staving off fantasied direful consequences may initially require a forced extinction procedure for their elimination.

#### *EXPOSURE TO THREATS GRADUATED IN AVERSIVENESS*

Inappropriate defensive behavior is frequently extinguished by introducing aversive stimuli at weak intensities that do not evoke avoidance

responses, and then gradually increasing their threat value until the most fearsome situations have been neutralized. By skillful application of stimulus change procedures the arousal capacity of aversive stimulus events can be eliminated without eliciting fear or alternative forms of defensive behavior.

Several studies have compared the relative efficacy of regular extinction and a stimulus change procedure used either alone or as a component of a multiple method for eliminating emotional responding. In an experiment by Kimble & Kendall (1953) animals performed avoidance responses to a light (CS) that was previously associated with shock. The avoidance responses of half the animals were extinguished by the conventional method of repeatedly presenting the fear-provoking CS at training intensity without the shock. For subjects in the second condition the

intensity of the CS was gradually raised in small steps from zero to the level used during training, and thereafter the light was presented at the training intensity as in the first group. Subjects initially exposed to the conditioned aversive stimulus at graduated intensities abandoned the avoidance behavior twice as fast as the group confronted from the outset by the CS at full intensity. In fact, 80 percent of the animals in the stimulus change condition rapidly extinguished emotional responses to weaker versions of the CS and consequently, they displayed no avoidance behavior at all when confronted with the formerly aversive stimulus at high intensity.

A graduated procedure can produce comparatively rapid extinction because superseding competing responses are more likely to occur to weak aversive stimuli than to more intense forms which activate strong avoidance

behavior. Once nonavoidant responses occur to situations containing few fear-provoking elements, the competing responses generalize also to similar stimuli containing more fearsome elements. In this way it is possible to extinguish emotional behavior without eliciting any avoidance behavior, provided the conditioned aversive stimuli are increased in sufficiently small increments.

The process of extinction can be further hastened by combining aversive stimulus change with positive stimulus conditions designed to evoke behavior capable of supplanting avoidance tendencies. By employing this type of multiple procedure, which is treated at length in the next chapter, the occurrence of nonfearful behavior to subjective threats can be better controlled. This is corroborated by Poppen (1968) in a laboratory study comparing five different methods for

eliminating behavioral inhibitions. After animals learned to press a lever for food, they were shocked immediately following a tone until it acquired the capacity to suppress responding thoroughly. The shock stimulation was then discontinued and the animals were assigned to one of five treatment conditions. For one group of subjects receiving regular extinction, the fear-arousing tone was presented periodically at the intensity used in training; for a counterconditioning group the training tone was accompanied by food rewards; a third group was administered graduated extinction in which the aversive tone was introduced at low intensity and progressively increased as weaker variants were neutralized; for subjects receiving the graduated-counterconditioning treatment aversive stimulus change was combined with food rewards; and finally, a fifth group of subjects participated in a



flooding procedure wherein the training tone was presented continuously for 10-minute periods. The degree of response suppression was measured by differences in rate of responding prior to, and in the presence of, the threatening tone.

The reductions in response suppression achieved by the various treatment procedures are summarized in Figure 6-9. Regular extinction was found to be least effective for eliminating conditioned fear, but the potency of this method was considerably enhanced by presenting the threatening stimuli in a gradual fashion. Behavioral inhibitions were most rapidly and thoroughly removed by reducing the aversiveness of fear- provoking stimuli through graduated presentation, and simultaneously eliciting incompatible responses. An essentially similar pattern of results was obtained for the number of

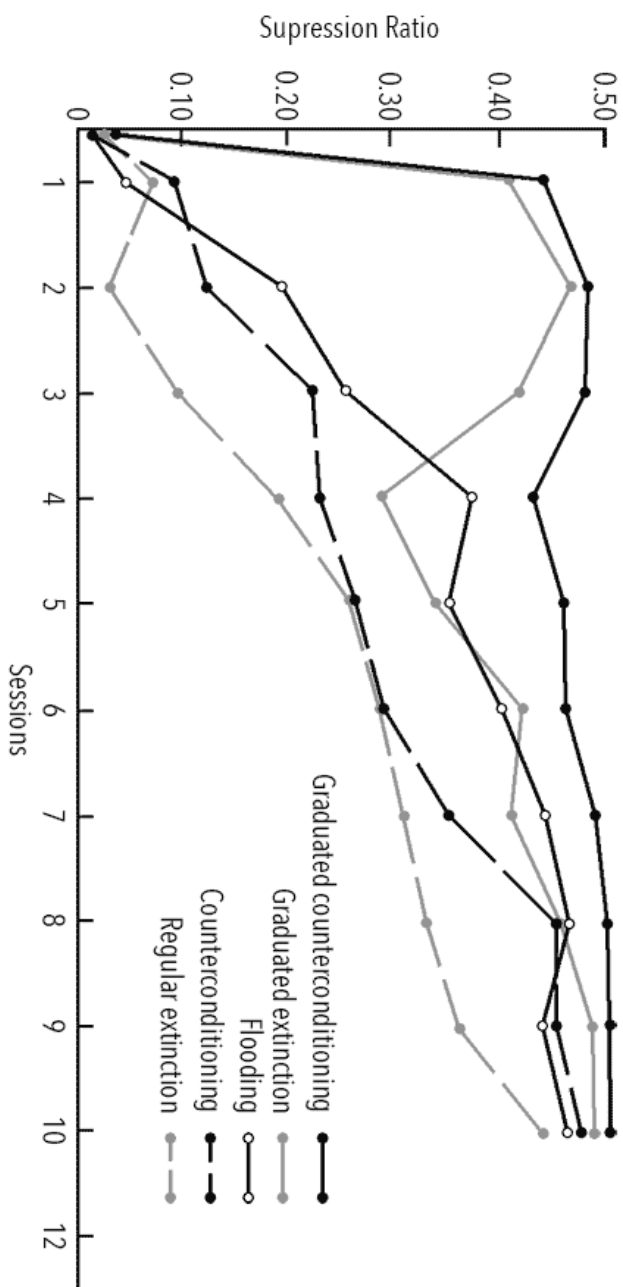


Figure 6-9. Reductions in response suppression achieved by subjects in each of the five treatment conditions during ten extinction sessions. A value of zero indicates complete suppression of the intermittently rewarded lever-pressing response, whereas a ratio of 0.50 represents no response inhibition. Poppen, 1968.

trials required to eliminate completely the behavioral inhibitions. Presenting fearsome stimuli in a graded series and eliciting competing responses both accelerated extinction, but the procedure combining these two factors reduced extinction time by half.

A number of case studies have been published in which a graduated extinction procedure was employed to modify severe emotional behavior. An illustration of the use of this principle is provided by Grossberg (1965), in the treatment of a woman who suffered from a public speaking phobia so incapacitating that she was unable to complete a speech course required for college graduation, even with the aid of tranquilizers, group therapy with other speech phobics, and 30 hours of individual psychotherapy.

The extinction program consisted of 17

sessions in which the student delivered increasingly longer speeches to progressively larger audiences in situations that gradually approximated speech-class conditions. Initially the student read familiar and unfamiliar passages from a book and then made brief speeches to the therapist alone in his office and in a small, empty classroom. Auditors were later introduced one by one until she delivered a variety of speeches to an audience of nine listeners. To further ensure adequate generalization of extinction effects, the stimulus conditions were continuously varied by utilizing several different classrooms, by having the student visualize her new classmates during demonstration speeches, and by having the therapist himself absent during some of the sessions. At the completion of the extinction series, the student delivered six speeches and attained a grade of "B" in the speech course from

which she had previously fled to a physician after a frightful struggle to complete a one-minute oration.

According to psychoanalytic theory, interpretations designed to reduce the strength of defenses should precede the labeling of impulse expressions. On the basis of deductions consistent with the latter theory made from Miller's (1948) conflict paradigm, Dollard & Miller (1950) advanced the view that anxiety that motivates avoidance responses in an approach-avoidance conflict should be reduced before attempting to actuate approach behavior.

The person with a severe neurosis who does reach the psychotherapist is a specially selected case with extremely strong avoidance tendencies. Therefore, trying to increase his motivation to approach goals will only increase his fear and conflict. This increase in misery will tend to drive him out of therapy. This is indeed what seems to

happen. Therapists have found that the first thing to do is to concentrate on reducing the fears motivating avoidance (i.e., to analyze resistances) rather than to try to increase the motivation to approach the feared goal [p. 359].

This theory implies that avoidance behavior can be modified most effectively by interpretive interview procedures and that no attempt should be made, during initial stages of treatment, to have clients perform the feared behavior. It is highly probable that if therapists were to force their clients to approach the most fear-provoking situations at the outset, they would indeed experience intense anxiety, and might even terminate psychotherapy. However, the experimental evidence previously reviewed demonstrates that avoidance responses can be readily extinguished if subjects are exposed to initially weak, but gradually increasing, aversive stimuli. An extinction procedure of this type was,

in fact, also successfully employed by Herzberg (1941) in the treatment of an agoraphobic housewife. This woman displayed severe anxiety and psychosomatic reactions whenever she went out alone; she consequently refused to leave the household unless accompanied by another person, or transported in a taxi. She was first assigned the task of walking by herself in a park, which constituted a considerably weaker threat than walking in the street. The anxiety reactions to the park situation were readily extinguished, and she was then instructed to walk alone on a quiet street in her neighborhood. In this way, the client was gradually reexposed to progressively more fear-provoking cues, until eventually she would walk almost anywhere alone without experiencing anxiety or psychosomatic reactions. Herzberg (1945) has employed similar graded performance tasks in conjunction with interview methods for

eliminating varied forms of avoidance behavior and for promoting new response patterns. In some of these cases, however, clients are presented relatively demanding tasks with insufficient preparatory experiences that would assure more effective progress.

It should be noted in passing that treatment approaches utilizing graded performance tasks are just as consistent with Miller's conflict paradigm as theories that advise focusing on avoidance tendencies. That is, unpunished evocation of weakly inhibited responses produces extinction effects that will generalize to the more strongly inhibited forms of behavior, thus reducing the entire avoidance gradient. In this manner anxiety associated with successively closer variants of the desired behavior can be progressively extinguished until clients are able to execute the goal responses without experiencing undue



emotional arousal. This strategy has, in fact, been successfully applied to the modification of agoraphobias (Jones, 1956; Meyer, 1957; White, 1962), claustrophobias (Meyer, 1957; Walton & Mather, 1963a), compulsive response patterns (Walton, 1960b), school phobias (Garvey & Hegrenes, 1966; Kennedy, 1965), severe sexual inhibitions (Haslam, 1965; Walton, 1960c), and more circumscribed avoidance responses (Freeman & Kendrick, 1960). In a series of interesting individual studies Foster (1967; Foster & Campos, 1964) was able to ameliorate clinical seizures and EEG dysrhythmia evoked by stroboscopic stimulation or certain musical selections through repeated presentation of the eliciting sensory stimuli initially at innocuous levels and gradually approaching the evocative forms.

Walton & Mather (1963b) report that similar

extinction procedures yielded variable results with obsessive-compulsive behavior that presumably was originally conditioned to response-produced stimuli rather than to environmental cues. In attempting to account for these diverse outcomes, Walton & Mather distinguish between treatment strategies aimed at extinguishing “the more basic conditioned autonomic drive (CAD)” from those directed toward the elimination of avoidance behavior to generalized environmental stimuli. According to their reasoning, in acute anxiety disorders instrumental avoidance responses are elicited by the underlying conditioned autonomic drive; consequently, in the latter condition, treatment should concentrate on the extinction of autonomic responsiveness since its removal will eliminate associated avoidance responses without any direct intervention.

To support this supposition, Walton & Mather cite two successfully treated males who displayed severe obsessive-compulsive disorders of recent origin. In the one case, a handwashing ritual, which was believed to be evoked by anxiety and guilt over violently aggressive fantasies, disappeared after the passive client received training in self-assertive behavior. Similar development of self-assertiveness in the second client resulted in reduction of obsessional thoughts about homosexuality and destructiveness, which were assumed to arise from anticipatory concern over negative social reactions to his obsequious behavior.

In behavioral disorders of long standing, Walton & Mather maintain that cues other than those originally involved in the aversive conditioning may, through the process of stimulus generalization, acquire eliciting potency so that

avoidance responses become “functionally autonomous” or partially independent of the chronologically earlier CAD. Hence, modification of chronic disorders would require the extinction of both the initial conditioned autonomic responses and the avoidance behavior. Results from several chronic cases, which displayed only partial improvement when their treatment was restricted either to the original conditioned stimuli or to the avoidance responses themselves, are presented as tentative support for the latter hypothesis.

The assumptions made by Walton & Mather about the conditions regulating avoidance behavior are disputed by a substantial body of evidence that avoidance behavior is not under autonomic control. These findings, which are discussed at length in Chapter 7, support the view that autonomic and instrumental avoidance responses are coeffects of aversive conditioning

rather than causally linked events. When emotional responses are conditioned to a particular stimulus, other cues falling on the same physical or semantic stimulus dimension also acquire eliciting potency through the process of generalization. A systematic behavioral assessment would most likely reveal that both primary and secondary stimuli evoke autonomic and avoidant responsiveness. Nor is the range of stimulus generalization necessarily determined by temporal factors. The autonomic-motor focus in treatment approaches proposed by Walton & Mather, in fact, reduces to the question of whether emotional reactions should be extinguished to primary or to generalized stimuli rather than to a drive-behavior distinction. The outcomes reported by the authors are completely in accord with predictions from the principle of generalization, that reduction in emotional behavior will be

greatest toward the stimuli that have been neutralized, regardless of where they happen to fall on the generalization gradient. The decrements in conditioned emotionality would become progressively smaller the farther the nontreated evocative stimuli are removed from those selected for extinction treatment.

In one of the reports (Walton & Mather, 1963b) that lends support to the above formulation, a 24-year-old single female who had had an extremely moralistic upbringing suffered from severe sexual anxieties. Any form of physical or social contacts with men, and even sexual intercourse in wedlock, was considered sinful. Following adolescence, when exposure to sexual information and a masturbatory episode generated intense guilt feelings, the child's marked sexual anxieties generalized to urogenital functions. During this time she developed an

obsessive concern about urination and defecation, and instituted elaborate toilet rituals designed to ensure complete cleanliness. The anxiety responses further transferred to animal feces and urine so that she also carefully avoided park seats, lamp posts, and chairs in private homes containing pets. Because of her inability to use public lavatories and benches, and her marked curtailment of social interactions with men, the woman was eventually forced to give up her job.

The treatment was designed specifically to decrease sexual anxieties by pairing drug-induced relaxation with scenes of progressively more intimate interactions with men. As a result, her anxiety responses to heterosexual stimuli were markedly reduced:

She could pass men in the street, sit next to them on public vehicles, wait in shop or bus queues with them and speak to them. She related two such incidents with satisfaction.

She had waited with a young man, a stranger, for half an hour at a bus stop and had become engaged in a lengthy conversation. This almost resulted in a date. On a second occasion she renewed a childhood acquaintanceship with a young man of her age [p. 167].

In accord with generalization principles, the client's generalized fear of urination, defecation, and excreta, stimuli far removed from the primary sexual stimuli, was only partially reduced.

In a second set of outcome data presented by Walton & Mather a single woman developed obsessive concerns about contamination by dirt, and compulsive handwashing rituals, subsequent to a guilt-producing love affair with a married man. In this particular case, however, sexual anxieties were untreated but compulsive responses to generalized eliciting stimuli were extinguished. The woman was required to perform



a series of tasks graded according to their contamination value and potency in evoking handwashing, such as use of public washbowls, toilets, and seats, touching door knobs, picking up objects from floors, and walking along dusty thoroughfares. The client's compulsive behavior was substantially reduced by this program but her sexual anxieties were undiminished.

It would appear from the data discussed above, together with laboratory findings on the generalization of extinction effects (Bass & Hull, 1934; Hoffeld, 1962; Hovland, 1937), that decisions about whether to orient an extinction program toward primary or generalized stimuli, or both types of events, should be determined by the nature and range of changes that one wishes to produce.

An interesting group application of graduated

extinction is described by Saul and his associates (Saul, Rome, & Leuser, 1946), in the treatment of severe and widely generalized anxiety arising from traumatic military experiences. The soldiers were shown, in a secure and relaxing context, a graded series of movies of battle scenes beginning with exposures that they could tolerate. Initially the films depicted preparatory battle scenes, followed by motion pictures of surface and aerial bombardment from which displays of injury and destruction were deleted. In later sessions the soldiers were gradually presented more frightening combat scenes. In addition to regulating the aversiveness of pictorial stimuli, the presentation of anxiety-arousing combat noises was likewise controlled. At first the battle scenes were shown silently, and only gradually was sound introduced. Day by day the sounds of gunfire, explosions, and aerial bombardment were

increased until full intensity was reached. As a further safeguard against excessive emotional arousal, each soldier was provided his own volume control with which he could regulate the amount of aversive stimulation.

An average of 12 showings of approximately 15 minutes each effectively extinguished the soldiers' intense emotional responses, as shown by reactions of calm, and even boredom, to scenes that had previously terrified them. Additional evidence that the soldiers had been successfully desensitized is provided by their relatively undisturbed responses to a test film of a Marine invasion depicting intense combat and severe casualties. Moreover, they were able to attend commercial movies, which most of them had previously avoided because of the newsreels, and they displayed a generalized diminution of emotional responsiveness to a variety of sounds,

noises, and even music to which they had been formerly hypersensitive.

Results of the above study cannot be fully evaluated in the absence of an untreated control group and more systematic assessment of changes in emotional responsiveness. However, the favorable outcomes yielded by modeling studies utilizing films graduated in aversiveness (Bandura & Menlove, 1968) suggest that group extinction procedures involving pictorially presented threats could be employed effectively to extinguish common fears that are no longer appropriate.

#### *ROLE OF POSITIVE INCENTIVES IN EXTINCTION*

The selection of appropriate performance tasks and their sequential arrangement is usually given detailed consideration, but the important role played by incentive factors in extinction programs is often overlooked. Even though a

change agent has planned an optimal sequence of activities, his efforts will be of little avail unless individuals carry out the necessary procedures that have been prescribed for them. Considering that the program, if it is to be successful, requires people to enter into threatening situations that were previously avoided and to perform fear-provoking responses, some degree of reluctance or even opposition is not unexpected. Fortunately, there are several factors that support approach efforts despite anxiety. The distress and impaired functioning created by inappropriate fears and inhibitions, coupled with expectations of eventual benefits, undoubtedly serve as strong inducements to engage in formerly inhibited activities. In addition, social rewards in the form of interest and approval from change agents and other significant individuals function as positive incentives for performing essential behaviors.

Finally, the skill with which extinction experiences are organized is an influential factor facilitating or hampering behavioral change. If people are initially encouraged to carry out inhibited behaviors under highly favorable conditions, the possibility of adverse outcomes, which might jeopardize positive motivation, is minimized. By making the progression in each successive assignment so gradual that failures seldom occur the rewards associated with continual tangible progress will help to strengthen willingness to attempt more difficult tasks. In some cases, however, the change agent may have to introduce more powerful positive incentives to keep individuals in subjectively threatening situations. Moreover, when the extinction program is self-managed in everyday situations, as is frequently the case, performance tasks must be specified in considerable detail if they are to be implemented

by clients with high probability of success.

The influential role of feedback in sustaining and accelerating extinction of phobic behavior is shown by studies in which precise feedback of performance is sequentially added and removed. In one experiment (Leitenberg et al., 1968) claustrophobic and knife phobic women were instructed to engage in feared activities for progressively longer durations, under conditions where for each trial, they recorded the exact time spent in a small room or looking at knives or did not receive any time scores. Explicit feedback facilitated behavioral change, omission of time scores produced a decline in performance, and reinstatement of feedback led to renewed improvement. However, adding praise to informative feedback did not further enhance the rate of progress. Using a similar sequential design, Agras, Leitenberg, & Barlow (1968) demonstrated

that performance feedback was also a powerful factor in eliminating severely agoraphobic behavior (Figure 6-10). These findings indicate that failure to recognize progressive improvement in performance can seriously hinder progress and create unnecessary feelings of discouragement.

It is important to bear in mind that not all avoidance behavior necessarily represents an anxiety problem. In some instances, the original aversive conditions have ceased to operate and the avoidance behavior is, in fact, primarily maintained by its positive consequences. A school-phobic child, for example, may continue to avoid scholastic situations after they have lost their threatening value because of increased attention and other rewards associated with remaining at home. Under these conditions, a fear-extinction program would be inappropriate and fruitless. If any significant behavioral change is to be achieved



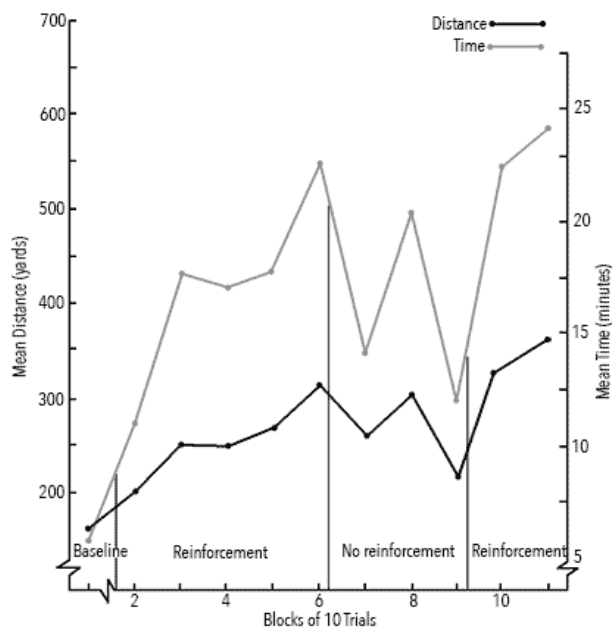
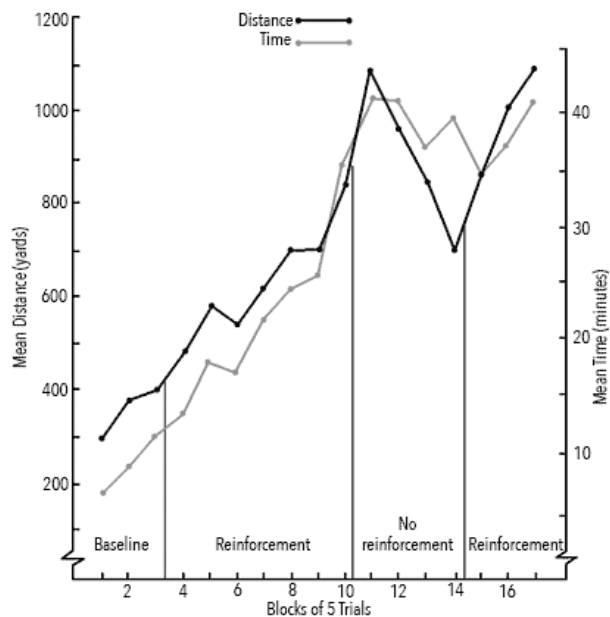


Figure 6-10. Effect of social reinforcement and nonreinforcement of performance improvements upon the rate of progress of two agoraphobic clients. Atras, Leitenberg, & Barlow, 1968.

the rewards associated with avoidance behavior must be withdrawn and made contingent upon more beneficial modes of response.

In many instances avoidance behavior is supported by both positive and negative reinforcers. Hence, partial attainment of the treatment objectives may produce some disappointment because of the loss of benefits formerly derived from the behavior disorder. In such case; adequate substitute rewards must be provided. It may also be advisable to delay temporarily the removal of deviant behavior that has high functional value until alternative sources of reward are established. One must, therefore, identify the factors maintaining deviant behavior before embarking on change programs, and utilize this information in preparing individuals for changes in accustomed reinforcement that their recovery will most likely produce.

### *EXTINCTION THROUGH PROLONGED OR MASSIVE EXPOSURE TO AVERSIVE STIMULI*

In the preceding extinction approach, aversive stimuli are initially presented at low intensities that are easily tolerable, and more stressful situations are gradually introduced as emotional responses to weaker threats are progressively eliminated. Considering that in laboratory investigations extinction is typically carried out in relation to aversive stimuli at training intensity, it is evident that fear extinction can be achieved without stimulus graduation. Indeed, even prolonged or massive exposure to aversive stimuli at high intensities may produce rapid and stable extinction of avoidance responses.

Polin (1959) trained animals to jump a hurdle at the sound of a buzzer in order to avoid electric shock. The animals were then given four days of differential extinction training: One group

received 20 trials daily of five-second exposures to the buzzer with a physical barrier erected to prevent the avoidance response; the “flooding” group each day received 100 seconds of continuous auditory stimulation in a free-responding situation; the control group was merely given a four-day rest. In subsequent phases of the experiment, all animals received an identical series of regular extinction trials, followed by two days of avoidance reconditioning in which the buzzer was again associated with electric shock, and a final series of regular re-extinction trials.

As summarized graphically in Figure 6-11, animals that experienced long durations of continuous exposure to the fear-arousing stimulus extinguished avoidant responding considerably faster than either the control or barrier group in both extinction phases. The results further revealed that extinction based on forced exposure

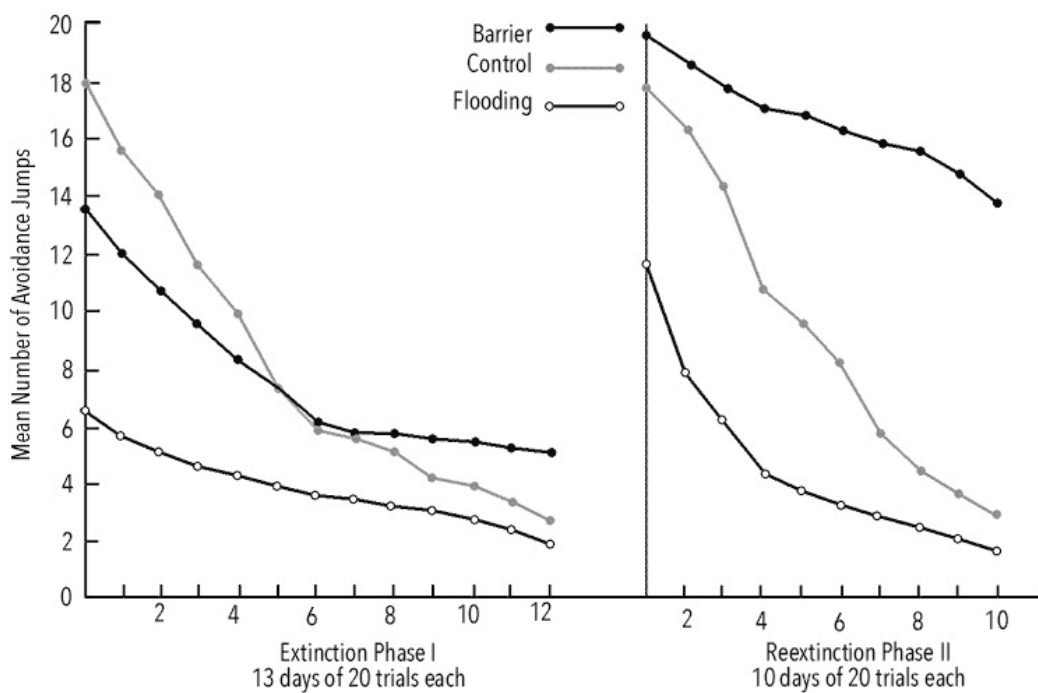


Figure 6-11. Rate of extinction and reconditioning of avoidance behavior eliminated by different extinction procedures. Polin, 1959.

through physical restraints had no lasting value and may, in fact, have prevented the elimination of avoidance behavior. If responses are physically restrained, they cannot occur and therefore they cannot be eliminated through nonreward. Thus, initially, the physically restrained subjects showed more rapid extinction than the controls, but in both the later phases and in the re-extinction, the barrier group displayed a much higher incidence of avoidant responding even though the groups started at the same reconditioned level.

Stampfl (Stampfl & Levis, 1967) has developed a method of treatment, entitled *implosive therapy*, which is based on massive exposure of clients to highly aversive stimuli in imaginal form. Evaluation of this particular approach is somewhat complicated by the fact that the conceptualization of psychological disorders appears to have limited relationship to the

extinction procedure actually employed. It is assumed that stimuli most closely associated with traumatic experiences are invested with intense anxiety and are, therefore, repressed and inaccessible. Other stimuli more remotely connected with the trauma also acquire anxiety-arousing properties, but to a lesser degree. These weaker aversive stimuli, that are experienced as frightening, elicit avoidance behavior even though the focal threat is absent. The avoidance responses activated at the early stage of the stimulus sequence successfully protect the remaining, more threatening elements from extinction.

In laboratory studies cited in support of the above formulation, Levis (1966, 1967) employed a paradigm in which animals underwent regular aversive conditioning except that several distinct stimuli preceded the onset of shock stimulation. In one experiment, first a door of the shock

compartment was raised, six seconds later lights flashed, then a buzzer was sounded which was, in turn, followed by shock. During extinction trials animals quickly exited from the threatening compartment at the appearance of the first signal of danger, thus preventing reexposure to the remaining aversive stimuli. Eventually avoidance responses to the initial cue were extinguished but the resultant contact with the second feared cue, which retained aversiveness transmitted by the primary experiences, temporarily reinstated the arousal potential of the first stimulus so that it regained its capacity to maintain avoidance behavior for some time before it was permanently neutralized. A similar, though progressively shorter, reacquisition process occurred with each stimulus in the sequence, resulting in a phenomenal amount of avoidance responding. One animal, for example, performed 921 avoidance



responses to the most remote stimulus, 75 to the second fearsome cue, but only 4 to the stimulus directly associated with the painful experiences.

The above paradigm is well suited for demonstrating sequential conditioning and extinction of aversive stimuli, but it is unclear what relevance, if any, the concept of repression has to the phenomenon. The term repression is usually employed to denote thought inhibition. The arousal potential of an aversive stimulus can be preserved from extinction by avoidance of preceding cues regardless of whether or not the protected events are symbolically represented. Furthermore, the fact that one stops thinking about fear-provoking situations does not prevent him from being repeatedly exposed to them.

Implosive therapy is based on the premise that extinction of anxiety can be most effectively

achieved by repeated elicitation of intense emotional responses without the occurrence of physically injurious consequences. Mainly for reasons of ease, the emotional responses are activated symbolically. The therapist vividly describes the most revolting and terrifying experiences conceivable, and clients are urged to imagine themselves actively engaged in these shocking activities. A compulsive hand washer who is obsessed about dirt, for example, is asked to visualize himself reaching into a wastebasket and then withdrawing his hand, which is depicted as dripping with a sickening mixture of mucus, saliva, vomit, and feces. If the dirt phobia is believed to arise from anxiety over anal functions, the client is further instructed to imagine himself residing in a septic tank where he eats his meals, entertains his friends, and mashes around in this soggy abode. Stampfl reasons "that he who has

lived in a septic tank need not fear the dirt found in a wastebasket.” This is obviously not a method for fastidious therapists. The distressing scenes are presented again and again with appropriate embellishments until they cease to evoke emotional reactions. This procedure is repeated with other variations on major sources of disturbances. In order to accelerate the process of extinction, clients are also instructed to recreate disturbing scenes imaginally on their own between treatment sessions.

Relatively little time is spent in ferreting out the crucial sources of anxiety in any given case. This is due, in part, to the assumption that extinction of emotional responsiveness to extremely fearsome situation will generalize broadly to less frightening ones. A second reason is that the anxiety elicitors assumed to be repressed are routinely selected from a limited set

of categories relating to aggression, sex, rejection, oral and anal functions, bodily injury, punishment, loss of impulse control, and guilt.

Extinction is initially carried out with environmental stimuli that are evident elicitors of avoidance behavior. After these “symptom-contingent” cues, which are believed to be the least anxiety provoking, have been neutralized, clients are repeatedly presented with the hypothesized repressed events in harrowing forms. It seems exceedingly improbable from the case material cited that the heterogeneous cues selected for extinction could have occurred sequentially in traumatic conditioning. There is also some ambiguity in the implementation of implosive procedures because no explicit criteria are presented for determining when treatment should be confined to the evident determinants of avoidance behavior or extended to hypothetical

sources of anxiety. Clients may therefore be needlessly subjected to aversive stimulation while therapists are neutralizing hypothesized determinants of questionable relevance. The loose relationship between conceptual rationale and practice is further shown in experimental evaluations of implosive therapy where supposedly dynamically significant contents are never pursued.

Results of animal experimentation (Polin, 1959; Poppen, 1968) and a few clinical applications (Malleon, 1959) indicate that avoidance behavior can be extinguished by prolonged or massive exposure to subjectively threatening stimuli. Preliminary studies (Hogan, 1966; Levis & Carrera, 1967) demonstrating that implosive therapy produced greater reduction in deviant responses on the MMPI test than conventional treatment were somewhat

unconvincing because of the weak criterion measure employed. Subsequent laboratory investigations present evidence, based on objective measures of behavioral change, that this method can achieve extinction of avoidance behavior. In one experiment (Kirchner & Hogan, 1966) coeds who feared rats were either assigned to a control condition in which they were instructed to imagine pleasant scenes while listening to music, or they received group implosive therapy. To minimize possible social influences, subjects in the latter condition listened through earphones in a language laboratory to a one-hour tape-recording that described, among other frightening scenes, rats biting, ripping flesh and attacking a person en masse. A test for avoidance behavior disclosed that 62 percent of the subjects in the implosive condition were able to pick up a white rat, while 26 percent of the

controls performed the same behavior. Essentially similar outcomes were obtained in a second experiment (Hogan & Kirchner, 1967) on the basis of a single session of individual implosive treatment. Sixty-seven percent of the treated subjects, and 9 percent of the controls, could pick up a rat in a subsequent behavioral test.

The efficacy of this method was further evaluated in a comparative study (Hogan & Kirchner, 1968) with coeds who feared snakes. One group participated in a 45-minute implosive session in which they were asked to imagine slimy snakes crawling over them, biting them relentlessly, and finally wrapping tightly around their necks, slowly strangling them. A second group of subjects, assigned to a verbal therapy condition, discussed their interpersonal relationships, their prior experiences with snakes, and were reassured that snakes are harmless. The

third group of subjects read material concerning the myths and habits of snakes. Whereas the percentage of subjects able to pick up a snake after treatment did not differ significantly in the implosive (70 percent) and the verbal therapy (40 percent) groups, these subjects were considerably braver than those receiving bibliotherapy (10 percent). Moreover, the implosive procedure was successful with 67 percent of the coeds who had previously failed to pick up the snake after completing verbal therapy or bibliotherapy. The fact that a brief verbal discussion produced criterion performances in 40 percent of the cases suggests that either the avoidance behavior of many of the subjects was relatively weak to begin with or the test was not sufficiently difficult. In future assessments of implosive therapy, it would therefore be of value to require more fear-provoking performances toward the phobic



objects, and to test for the generality and stability of behavioral changes brought about by this method.

Contrary to results of the foregoing studies, Mealiea (1967) reports findings based on a well-designed experiment that cast doubt on the efficacy of the implosive method. Snake-phobic subjects were administered either taped desensitization, implosive therapy that evoked extremely anxiety-arousing imagery, a modified desensitization procedure in which relaxation was paired with scenes taken from the implosive treatment, a pseudotherapy combining relaxation with pleasant imagery, or no treatment at all. The snake-approach behavior performed by the different groups of subjects prior to treatment, immediately after treatment, and a month later is summarized graphically in Figure 6-12. Graduated desensitization proved superior to the other

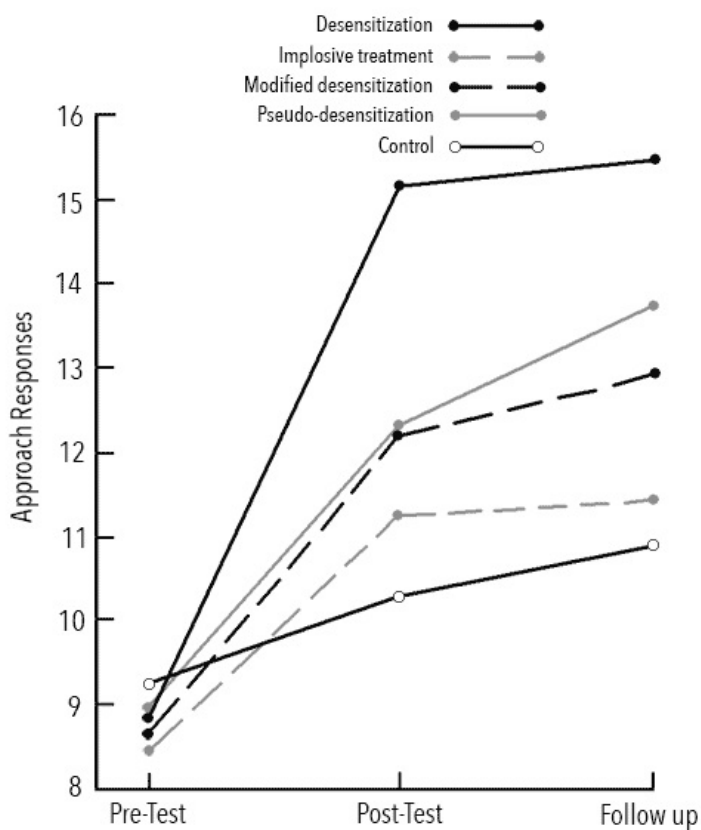


Figure 6-12. Mean number of snake-approach responses performed by subjects in each of five conditions before treatment, immediately after treatment, and a month later. Plotted from data of Mealeia, 1967.

conditions in reducing avoidance behavior toward a snake and a second feared animal that served as a measure of generalization. However, subjects who received implosive therapy did not differ from any of the control groups. In view of these negative results, the implosive method should be utilized with caution until it has been subjected to further laboratory tests.

A distinction should be drawn between flooding procedures in which conditioned aversive stimuli are simply presented in intense forms from implosive procedures that provide vivid accounts of hazardous consequences that the feared objects can produce. There is considerable difference between exposing people repeatedly to a fearsome collection of rodents without any adverse effects and depicting them eating human flesh. Some of the portrayed consequences may never have occurred to phobic subjects and could establish, at

least temporarily, a new basis of fearful self-arousal. It is interesting to note in this regard that the types of shocking and nauseating consequences employed in implosive therapy to extinguish avoidance behavior are also being used to create strong aversions toward attractive or addictive objects. It is entirely conceivable that aversive stimuli may have markedly different effects depending upon subjects' fear level and the valence of the objects with which they are paired. There is also reason to expect that conditioned aversive stimuli might initially increase negative responsiveness but with repeated presentations would eventually lose their emotion-arousing capacity. To gain a better understanding of both fear-extinction and aversion-conditioning processes would require detailed analysis of changes in the magnitude and quality of emotional arousal over a series of trials in which aversive

experiences are elicited in conjunction with attractive, neutral, and fear-provoking objects.

### *EXTINCTION BASED ON MASSED EVOCATION OF RESPONSES*

Repeated nonreinforced evocation of effortful behavior creates aversive consequences in the form of pain and fatigue, which inhibit responses that will produce the discomfort. Successive extinction operations of this type typically result in progressive decline, and eventually complete elimination, of the behavior. The method of massed performance has been applied on a limited basis to incapacitating tics and other spasmodic movements that have proved refractory to a host of medicative and psychological ministrations.

These patterns of muscular contraction are usually conceptualized as conditioned avoidance responses that were originally evoked in highly

traumatic situations (Yates, 1958). It is assumed that tics probably occurred by chance in close temporal proximity to the termination or reduction of intense aversive stimulation and, through the accidental correlation, they acquired emotion-reducing qualities. Muscular contraction has some inherent pain- and tension-reducing value which would further enhance the self-reinforcing character of such responses. The fact that the rate of tics increases under conditions of stress and excitement is considered as suggestive evidence for the “tension-reduction” interpretation.

It is impossible to unravel from retrospective accounts the actual contingencies under which tics are established; there is nevertheless ample observational evidence that animals in aversive conditioning experiments frequently acquire tic-like responses that are highly resistant to

extinction long after noxious stimulation has been discontinued. Considering, however, that persistent stereotyped movements have also been established through adventitious reinforcement in experiments employing reward contingencies (Skinner, 1948), it is probable that tics, in fact, originate under a variety of learning conditions.

Avoidance responses that are automatically self-reinforcing upon occurrence can be eliminated in several different ways. In a stimulus-oriented approach one would neutralize the conditioned aversive stimuli controlling the occurrence of avoidance behavior. On the other hand, in a response-oriented approach, efforts are made to nullify the rewarding value of avoidance responses either by externally administered negative consequences (Barrett, 1962; Goldiamond, 1965), or by massed evocation that results in response-produced aversive effects.

Desensitization procedures have not been utilized to eliminate tics, but reactive extinction methods have.

One factor that influences the rate of extinction based on reactive procedures is the frequency with which the responses are performed. In general, there tends to be little diminution in the strength of avoidance behavior when extinction trials are widely distributed, whereas under conditions of massed evocation aversive effects presumably build up rapidly, and, consequently, extinction is accelerated (Calvin et al., 1956; Edmonson & Amsel, 1954). In accord with laboratory findings, Yates (1958) reports that massed evocation of responses in which a woman voluntarily performed multiple tics for as long as one hour, followed by prolonged rest, was the most effective procedure for extinguishing the motor responses. After the experimental program,



the client carried out the exercises at home (Jones, 1960) and recorded the number of tics that she was able to produce intentionally during each one-minute period. The results show a progressive decline in the rate of voluntarily emitted responses with successive extinction periods, as well as a significant reduction in her involuntary tics in everyday situations.

Clark (1966) treated three adults, all of whom manifested explosive repetition of obscenities or other expletives along with various motor tics. Because of this peculiar behavior one of the males was unable to appear in public or retain any friends, while the second was in danger of losing his job because of his incessant loud barking. A massed-practice regimen was employed in which the clients repeated the verbal tics as often as possible until they could no longer emit them. One of the three cases, a female in whom the motor tic

was more prominent, discontinued treatment after a reluctant start; in the other two, the muscular spasms disappeared spontaneously as the verbal tics were successfully extinguished. The clients remained free of tics as corroborated by recorded follow-up interviews.

Similar positive results are reported by Costello (1963) in the treatment of a 12-year-old boy who displayed a persistent eye-blink tic. The boy was initially instructed to produce the tics deliberately in front of a mirror for five-minute periods several times a day. The duration of the massed practice was then gradually increased to one-hour sessions. Although no quantitative data are presented, it is reported that the frequency of tics declined markedly and remained at a low level when evaluated again one year later.

On the assumption that extinction occurs faster

under conditions of low rather than high drive states, Walton (1961; 1964) utilized massed performance combined with medication to reduce emotional arousal in eliminating severe tics in two boys. One of the tiqueurs exhibited violent arm and leg movements that made it exceedingly difficult for him to eat his meals, and unsettled anyone in his immediate vicinity; the second suffered for eleven years from vigorous head-shaking and explosive nasal expiration. In both cases the tics were durably eliminated by reactive extinction. The contribution of the medication to these changes cannot be assessed, however, in the absence of cases treated without the pharmacological supplement. Even though responses may be extinguished more rapidly in a tranquilized than in a nondrug state, the clinical use of drugs may be contraindicated. The reason for this, as will be shown later, is that extinction

effects achieved in the drug condition often fail to transfer to the nondrug state.

Contrary to the preceding favorable outcomes, Feldman & Werry (1966) were unable to achieve any decline in head-jerking and eye-blinking tics in an adolescent boy through massed practice. The authors ascribe the failure to the presence of high anxiety. It is entirely possible that the conflicting findings are partly due to considerable differences in the way in which extinction was conducted. Previous investigators have utilized prolonged periods of massed performances lasting several hours, whereas in the study by Feldman & Werry the boy performed the head tic for only five-minute sessions because of dizziness, while the eye-blink served as an unpracticed control. However, this interpretation may not fully account for the discrepancies. Data published by Abi Rafi (1962) show that even the same procedure of

extended response evocation may produce differential results. In one case, a man who lost considerable sleep because of interference from pronounced facial grimacings benefited greatly from this method. The second case was an elderly woman who was forced to relinquish many activities she enjoyed because of a foot-tapping tic that was highly disturbing to others. Prolonged massed evocation failed to produce any appreciable response decrement. Her obstinate tic was subsequently modified successfully by self-control training in which incipient foot movements activated a buzzer to prevent further responding. One might wonder, because of the client's favorable response to a simple alternative treatment, whether greater progress would be achieved in behavioral modification if failures were less frequently attributed to inferred anxiety states.

The studies reported above indicate that a program of prolonged massed practice can extinguish extremely persistent tics, but the specific factors responsible for the observed changes and the most efficacious procedures cannot be determined from these data. The interpretation of results is especially complicated when medicinals or other methods are utilized in conjunction with repeated performance. Even the recommended optimum conditions of massed practice must be accepted with reservation, since the supporting experimental data (Yates, 1958) are based on a single case in which both duration and intensity of responding were continuously varied; consequently, it is by no means clear whether changes in extinction rate represent the cumulative effects of prior nonreinforced performance or variations in duration of evocation sessions. If response-produced aversive effects

play an influential role in the efficacy of massed-practice methods, it would be of considerable interest to investigate extinction rates as a function of both length of repeated performance and effortfulness of response. According to the inhibition hypothesis, increased effortfulness, which could be varied in terms of the vigor with which responses are performed, should result in faster extinction.

The elimination of persistent behavior under conditions of massed nonreinforced evocation is generally attributed to the development of conditioned inhibitory responses arising from reactive fatigue states. As noted earlier, however, interfering responses can originate from a variety of sources; therefore, extinction outcomes may reflect several different processes. Moreover, some reduction in tics is probably attributable to increased efforts at self-control (Barrett, 1962).

### *EXTINCTION IN INTERVIEW APPROACHES*

Interview treatment approaches generally consider permissiveness to be an important condition for therapeutic change. It is expected that when a client repeatedly expresses thoughts and feelings which, as a result of a previous history of punishment, elicit anxiety or guilt, but which the therapist does not disapprove or criticize, the client's inappropriate emotional responses will be gradually extinguished through nonreinforcement. It is further assumed that extinction effects will generalize to thoughts concerning related topics which also may be inhibited, and to the corresponding verbal and physical behavior as well (Dollard & Miller, 1950).

Some suggestive evidence for the relationship between permissiveness and extinction of conditioned emotionality associated with verbal behavior is provided in two studies reported by



Dittes (1957a, b). In one investigation (1957b), involving analyses of specific client-therapist interaction sequences, Dittes found that permissive responses on the part of the therapist toward sexual statements were followed by decreases in the client's autonomic responses, resistive or avoidant remarks, and interruptions in speech. A sequential analysis of 30 psychotherapeutic interviews with the same client revealed that initially sexual statements were accompanied by strong emotional arousal, but with repeated evocation anxiety responses to verbal sexual expressions were gradually extinguished.

There is every reason to expect that if psychotherapists respond favorably toward their clients' verbal expressions of thoughts and feelings that were previously punished, the attendant emotional responses will eventually extinguish.

The critical issues, therefore, that remain to be answered are concerned with the degree of generalization of extinction effects to nonverbal behavior and to other persons. These questions are particularly critical since it is not uncommon for clients to express thoughts and feelings freely within the safety of the interview setting, but to remain inhibited and fearful in their everyday interactions. If a satisfactory degree of transfer can be demonstrated, which is doubtful in view of the generally discouraging outcome data, controlled studies would be needed to assess the relative efficacy of verbal extinction procedures and approaches employing graded performance tasks in eliminating inappropriate affective and avoidant behavior.

*“Abreaction” and Extinction.* Changes effected by abreactive procedures, in which clients are induced by hypnosis, intravenous barbiturates, or

inhalational anesthetics to revivify past traumatic events, may likewise be explained in terms of an extinction process. During symbolic reinstatement of traumatic episodes, individuals typically express the intense emotional responses experienced at the time of the fear-provoking incidents. The emotional expression is also frequently accompanied by a reduction in avoidance behavior that was originally elicited in the traumatic situation and subsequently generalized to other similar stressful situations.

The process of traumatic aversive conditioning, generalization, and extinction is illustrated in a successful ether abreaction of an anxiety disorder apparently originating in a gruesome battle experience 18 years earlier (Little & James, 1964). The client had shot two young soldiers in the back with a concealed weapon while being taken captive near enemy lines. After

disarming two other soldiers, he burst through a doorway in a small farmhouse to find 12 enemy troops in the process of wakening. He stood guard over them for 10 strained hours, finally shot their sergeant, who kept urging the soldiers to rush their captor, and brought in the prisoners when night fell. The next day he developed a temporary paraplegia when a rifle grenade exploded nearby. Following his army discharge, the client continued to experience chronic anxiety and guilt, avoided all military functions and, for 18 years, was unable to open and walk through a door if he could hear voices on the other side.

The client received five abreaction sessions in which he recreated, in action and with violent emotion, the traumatic military episode. The authors report progressive reduction in anxiety and guilt with each session. Moreover, the door phobia was eliminated, and according to the 12-

month follow-up report, the client extended his range of social interactions and continued to experience no difficulties in walking through doors anywhere.

The hypnotic and pharmacological abreactive techniques currently in use are derived historically from the early work of Freud & Breuer (1940), who employed hypnotic abreaction in the modification of functional sensory-motor disorders such as anesthetics, neuralgias, paralyses, visual disorders, epileptoid convulsions, and other forms of defensive reactions. This method, however was abandoned by Freud in favor of free association and interpretive procedures because affective expression appeared to produce only a temporary elimination of the associated behavioral disorders.

As shown earlier, in order to achieve

permanent or complete extinction of emotional responses it is necessary to present the fear-provoking stimuli repeatedly without reinforcement. During the course of extinction, emotional responses are likely to reappear at some strength, although the amount of recovery diminishes with successive extinctions. It is, therefore, not surprising that a few extinction sessions, in which a client was symbolically reexposed to highly traumatic stimulus events, failed to reduce emotional responding to a stable zero level. Had Freud extended the extinction series it is probable that his original “cathartic” procedure might have proved more efficacious than the protracted interpretive form of treatment that he subsequently adopted.

An interesting laboratory demonstration of the progressive decline of emotional behavior with repeated hypnotic abreactions of a traumatic

episode is furnished by Lifshitz & Blair (1960). The subject, a 23-year-old female, revived under hypnotic age regression a near drowning that she had experienced at 10 years of age. "She was at the beach with her father and waded too far out into the water, was knocked down by a succession of waves, inhaled and swallowed water, and was in fear of drowning when rescued by her father [p. 248]."

Under hypnosis the subject spontaneously recalled this specific episode seven times, during each of which the following autonomic reactions were continuously recorded: duration of abreaction as revealed principally by facial expressions; basal heart rate immediately prior to the description of the unpleasant experience; maximum respiratory rate during abreaction; GSR reactivity; frontalis muscle activity; cheek temperature; and total body movement. As shown

in Table 6-1, repeated nonreinforced evocation of emotional responses to the past traumatic event produced a diminution of emotional responsiveness. The fact that the subject continued to exhibit marked physiological responses to other unrelated traumatic incidents indicates that the former changes reflect a genuine extinction effect, rather than a general adaptation process.

Table 6-1 Analysis of Poly graphic Recordings (Lifshitz & Blair, 1960)

Duration of abreaction	2'	2'	1'10"	1'	1'
Maximum respiratory rate during abreaction	36/min	39/min	18/min	24/min	24/min
No. of GSR waves during abreaction	16	16	6	9	1
Basal heart rate (20 sec. average)	81/min	72/min	90/min	87/min	87/min
Maximum	100/min	120/min	95/min	100/min	100/min



heart rate during abreaction					
Frontalis muscle activity during abreaction	Moderate	Moderate	Slight	Very slight	Very slight
Cheek temperature during abreaction	Fall	Fall (toe temp)	No change	No change	No change
Bed movement during abreaction	Moderate	Marked	None	None	None

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Abreactive procedures are probably best suited for producing rapid and stable extinction of emotional responses developed in traumatic conditioning situations, *provided that the threats are no longer present*. Clinical case data (Shrovon & Sargant, 1947) seem to bear this out, although in instances where abreaction is used in conjunction with drastic environmental changes as well as other treatment procedures, it is impossible to isolate the factors responsible for the reported

behavioral modifications.

Traditional accounts of the abreactive process generally ascribe beneficial outcomes to the “discharge of pent-up emotions” and the “working through” of spontaneously recalled material. From a learning point of view, the critical therapeutic factor is the repeated elicitation of emotional responses without reinforcement rather than the energy discharges or the historical insights. For this reason, it is not unexpected that persons who express strong hostile, dependent, or depressive feelings while under the effects of barbiturates or anesthetics fail to attain enduring benefits (Hordern, 1952) when the reinforcement contingencies generating and maintaining these unpleasant emotional states remain unaltered. Discussions of the efficacy of abreactive procedures are usually confined to the influence of clients’ personality characteristics and emotion

induction procedures, hypnotic, barbiturate, or anesthetic. However, both in theorizing and in clinical practice, virtually no attention has been devoted to the variables that determine the rate of extinction.

## Summary

In the process of extinction, when the reinforcing consequences for a particular response pattern are consistently discontinued, the recurrence of the behavior is diminished and eventually ceases. Since the decremental effects of nonreinforcement are controlled by many variables, several different theoretical interpretations of extinction have been proposed.

Contrary to the connotation of the term, extinguished behavior is displaced rather than permanently lost. In fact, nonreinforced behavior is often abandoned without being performed

solely as a result of observing changes in conditions of reinforcement, and it is easily recovered by reinstating the original reinforcement contingencies. Such rapid changes in behavior suggest that extinction phenomena primarily reflect the operation of cognitively mediated inhibitory sets rather than the alteration of specific stimulus-response associations. That is, when an organism discerns that the usual response consequences have been discontinued, the behavior is discarded and supplanted by alternative response patterns. However, in the case of severe avoidance behavior, cognitive control may be relatively weak and the absence of aversive consequences must be repeatedly experienced, either directly or vicariously, before the behavior is abandoned.

Under conditions where no reinforcement is externally administered during the extinction

phase, it is assumed that continued performance of nonrewarded behavior generates aversive effects and its cessation provides negative reinforcement for competing response patterns. This may take the form of fatigue reduction, elimination of aversive emotional effects resulting from the omission of expected rewards, or fear reduction resulting from the absence of aversive consequences.

Behavior that is maintained by positive reinforcement is extinguished by discontinuing its rewarding consequences. Omission of expected rewards for given performances can generate aversive emotional effects that function analogously to punishment, as shown by evidence that stimuli previously associated with nonreward acquire arousal capacity, their presence reduces responsiveness, and escape from cues signifying nonreward can reinforce new performances. As

behavior is reduced through nonreward, alternative modes of response eventually emerge. The degree of behavioral variability and the characteristics of the new actions occurring during the course of extinction depend upon the options that individuals have previously learned for securing reinforcement. Reliance on extinction alone, therefore, does not guarantee that desired response patterns will appear unless they happen to be strongly developed. Behavioral changes can be hastened and effectively controlled, however, by combining extinction of undesired responses with stimulus control procedures and with modeling and positive reinforcement of competing response tendencies.

Extinction of avoidance behavior is achieved by repeated exposure to subjectively threatening stimuli under conditions designed to ensure that neither the avoidance responses nor the

anticipated adverse consequences occur. The major obstacle to eliminating defensive behavior arises because successful avoidance of events that are no longer dangerous preserves their aversiveness and forestallment of anticipated consequences reinforces the defensive activities. Attempts have been made to facilitate extinction of avoidance behavior by blocking its occurrence in the presence of fear-arousing stimuli. Such forced exposure may simply produce other types of avoidance responses without altering the arousal potential of the feared situations.

Inappropriate defensive behavior is most frequently eliminated by an extinction procedure involving gradual stimulus change. This is achieved by reexposing individuals initially to aversive stimuli at weak intensities that do not evoke avoidance responses, and then to gradually increasing threats until the most fearsome

situations have been completely neutralized. If the aversive stimuli are increased in sufficiently small increments emotional behavior can be successfully extinguished with minimal fear elicitation and avoidance responding.

The third and most recently developed extinction procedure involves prolonged and massive exposure to intensely disturbing events that are symbolically created. Preliminary findings show that avoidance behavior can be eliminated in this manner, but the full effects of this method have not as yet been adequately evaluated.

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## Desensitization through Counterconditioning

Of the various methods of behavioral modification derived from learning theory, those based on the principle of counterconditioning are most widely applied to behavior in which conditioned emotionality plays a prominent role. These psychological conditions, which are most frequently seen in conventional interview treatments, include anxiety states, chronic tensions, and other forms of autonomic overactivity reflected in a variety of somatic disturbances of a functional nature. Conditioned emotionality is also involved in most behavioral inhibitions and avoidant response patterns.

The introductory chapter discussed the process whereby formerly neutral events, through their conjunction with aversive experiences, acquire emotion-arousing properties. If negatively valenced events are repeatedly associated with positive experiences, the stimuli gradually lose their aversive quality. This outcome is achieved by eliciting activities that are incompatible with emotional responses in the presence of fear- or anxiety-arousing stimuli.

#### *RELATIONSHIP BETWEEN EMOTIONAL CONDITIONING AND INSTRUMENTAL RESPONDING*

Most of the desensitization procedures that will be discussed in this chapter are predicated on the assumption that elimination of conditioned emotional arousal will decrease or eliminate instrumental avoidance behavior. In the present discussion emotional arousal encompasses both autonomic and central arousal processes. This

outcome presupposes that classically conditioned effects exert mediating control over instrumental!) learned behavior. It has been demonstrated in numerous experiments with infrahuman subjects that avoidance responses to a given stimulus can be established through prior classical pairings of that stimulus with aversive experiences (Rescorla & Solomon, 1967). These studies typically employ a three-stage paradigm in which animals initially learn to make instrumental avoidance responses to aversive stimulation in the absence of the critical cues. In the second phase, the animals undergo a classical conditioning procedure in which one tone ( $S^-$ ) is repeatedly paired with shock to endow it with arousal potential, whereas a different tone ( $S^0$ ) is never associated with shock stimulation so as to preserve its neutral properties; during the phase of classical conditioning the animals are skeletally

immobilized by curare to prevent instrumental responding. After the differential emotional conditioning has been completed,  $S^-$  and  $S^\circ$  are presented at random intervals under conditions where subjects are free to make motor responses, and the frequency with which these two stimuli elicit avoidance responses is measured. The stimulus that has been endowed with arousal capacity characteristically evokes high rates of avoidance behavior, which rarely occurs in the presence of the neutral stimulus. Moreover, other variables in classical conditioning that affect the activating properties of stimuli generally produce corresponding differences in instrumental avoidance behavior. It has also been shown that pairing of a stimulus with rewarding experiences in advance later facilitates learning and retards extinction of instrumental responding to the same or similar cues (Bower & Grusec, 1964; Trapold &

Winokur, 1967).

Although the influence of classically conditioned processes on instrumental responding has been well established, the nature of the mediators and the mechanisms through which behavioral control is achieved have not been determined. Several alternative explanations have been proposed and tested primarily with aversive conditioning paradigms (Rescorla & Solomon, 1967). Painful stimulation elicits not only internal emotional reactions but also previously acquired and unlearned escape responses. It is possible that, under conditions where subjects are free to respond motorically while undergoing classical conditioning, instrumental responses are also being learned and operantly reinforced. Some evidence suggesting that *skeletal mediators* alone cannot account for transfer is provided by Solomon & Turner (1962).



They observed such transfer effects even when animals were classically conditioned under curare, which prevents skeletal responding. However, curare procedures do not conclusively rule out motor mediators because, under lower levels of curarization, electromyographic responses can be increased through contingent reinforcement and later can facilitate the occurrence of avoidance responses in the normal state (Black, 1967). In addition, as Rescorla & Solomon (1967) have noted, even in completely curarized subjects efferent neural events, which regulate responding centrally, may be elicited and modified during classical conditioning.

Most currently popular theories of psychopathology assume that the effects of aversive conditioning control avoidance behavior through *autonomic mediators*. According to this interpretation, negatively valenced cues elicit

autonomic arousal (usually designated as anxiety) that produces afferent feedback having both stimulus and drive properties. Avoidance behavior eventually becomes conditioned to this autonomically produced stimulation, so that it both instigates and directs the performance of defensive response patterns.

Such an anxiety theory receives little empirical support if anxiety is equated with peripheral autonomic reactivity, as is generally the case. Studies in which autonomic and avoidance responses are measured concurrently reveal that these two sets of response events may be partially correlated but not causally related. Black (1959) found that avoidance responses during extinction persisted long after autonomic responses had been extinguished. Notterman, Schoenfeld, & Bersh (1952) likewise demonstrated that after subjects were provided with an effective means of

coping with a potentially threatening situation, they continued to perform appropriate avoidance behavior although their autonomic responsiveness was completely extinguished. This finding is further corroborated by Grings & Lockhart (1966), who report that subjects exhibit a sudden drop in autonomic arousal after learning that they can successfully avert painful stimulation by performing an appropriate avoidance response. The generality of the preceding results is limited, however, by the fact that only a single autonomic response was measured. In view of evidence (Lacey, 1950) that individuals display considerable variation in their characteristic modes of physiological reactivity to stress, and that different responses are not highly intercorrelated, no single measure of autonomic reactivity can be considered an adequate index of autonomic arousal.

Laboratory investigations of the acquisition and maintenance of avoidance responses in sympathectomized animals (Wynne & Solomon, 1955) provide a more critical test of the hypothesis that autonomic responses serve a mediating function in avoidance behavior. In the latter experiment, autonomic function was eliminated in a group of dogs by surgical section of the sympathetic segment of the autonomic nervous system, by vagus-drug parasympathetic blocking procedures, or by combined surgical and pharmacological treatments. The animals were then trained to avoid an intense shock by jumping over a barrier at a light signal. Following avoidance learning, the shock was discontinued to test for extinction of jumping responses to the light alone. Unoperated animals, which served as the comparison control group, participated in the same experimental situation. In addition, two dogs

underwent the surgical-drug procedures and the test for extinction after the avoidance response had been well established.

The results disclose that removal of peripheral autonomic responses has only a partial effect on the acquisition of avoidance behavior, with the differences occurring mainly in the initial phase of learning. Sympathectomized animals were more delayed than the controls in escaping shock, required significantly more trials to learn their first avoidance response, and tended to extinguish more rapidly, although differences were slight in this respect. However, speed of extinction in animals deprived of normal autonomic functioning after avoidance responses had been firmly established did not differ from that of the normal controls. Moreover, no consistent relationship was obtained between the avoidance learning pattern and the portion of the autonomic nervous system

that was blocked or resected.

All the sympathectomized animals eventually acquired stable avoidance responses. This suggests that autonomic arousal may play a facilitative role, but is not required for the establishment of avoidance behavior; maintenance of previously learned avoidance responses is apparently even less dependent upon autonomic feedback stimulation. The overall evidence thus indicates that mechanisms other than autonomic arousal govern avoidance responding. Indeed, the latencies of autonomic reactions and their associated feedback are much longer than those of skeletal responses; consequently, avoidance behavior is typically executed before autonomic reactions could possibly be elicited. This factor alone precludes autonomic control of avoidance behavior.

In a comprehensive review of the pertinent literature, Rescorla & Solomon (1967) propose the tenable view, principally on the basis of exclusion rather than direct corroborative evidence, that instrumental responsiveness is mainly regulated by *central mediators* which can be established and eliminated through classical conditioning operations. Since central processes exert control over both autonomic and instrumental responding, these two response systems are, in general, partially correlated. Major obstacles to clarification of the role of central mediators in avoidance behavior are created by the failure to specify the locus and nature of the mediating systems and the most valid indices of their activities. The problem is further complicated by suggestive evidence (Lacey, 1967) that the different arousal systems—electroencephalographic, autonomic, and

behavioral—are functionally separable. Although they generally appear concomitantly, physiological and behavioral arousal can be markedly dissociated pharmacologically. Thus organisms may be centrally aroused but behaviorally unresponsive, or conversely, they may be behaviorally excited in the absence of central activation as measured by standard electrocortical signs. These findings indicate that, under certain conditions, external stimuli may control avoidance responses independently of physiological arousal. Nevertheless, it is clear from studies in which stimuli are endowed with physiological arousal properties under curare that the stimuli are not directly conditioned to avoidance responses since these never occur. Rather, in the early stages the responses appear to be controlled by mediating events that are common to other stimuli to which avoidance responses have been previously



learned. After avoidance responses habitually occur with reinforcing consequences in the presence of cues, such conditioned aversive stimuli eventually acquire discriminative value and can exert control over avoidance behavior without emotional arousal. This type of shift in the locus of stimulus control accords with common observation that mediating functions diminish as response patterns become routine.

Whatever the specific regulatory mechanisms might be, the fact that overt behavior is modifiable by classical conditioning procedures has important treatment implications. Of particular relevance are studies demonstrating that neutralization of an aversive stimulus alone markedly facilitates subsequent extinction of avoidance behavior. In an experiment conducted by Black (1958), after animals learned to make shock avoidance responses to a tone, they were

skeletally immobilized by curare to prevent confounding results from any performance extinction during the treatment period. Animals in the control group received 50 performance extinction trials and were then given curare without special treatment. The experimental group simply experienced 50 presentations of the fear-provoking tone while in a curarized state. In a subsequent test, subjects who had received the classical extinction treatment required approximately 40 regular extinction trials to completely eliminate their avoidance behavior, whereas the group that was given performance extinction needed an additional 450 trials before they discontinued making avoidance responses.

In the foregoing study, classical extinction was achieved by repeated exposure to anxiety-arousing stimuli without any adverse experiences. The extinction process can be hastened by

presenting threatening stimulus events along with positive stimuli that elicit incompatible responses strong enough to supersede anxiety reactions. For example, Gale, Sturmfels, & Gale (1966) found that conditioned emotionality was eliminated more rapidly by repeated paired presentations of aversive stimuli with food than when the same aversive stimuli were presented alone.

The facilitative effects of eliciting antagonistic responses on extinction of emotional behavior are even more clearly illustrated by Poppen (1968). As part of a larger experiment, he compared the speed with which behavioral inhibitions were eliminated in animals when graduated aversive stimuli were presented either alone or in conjunction with food rewards. Figure 7-1 shows the mean number of exposures required to extinguish fear at each of the stimulus values of the aversive hierarchy for subjects receiving

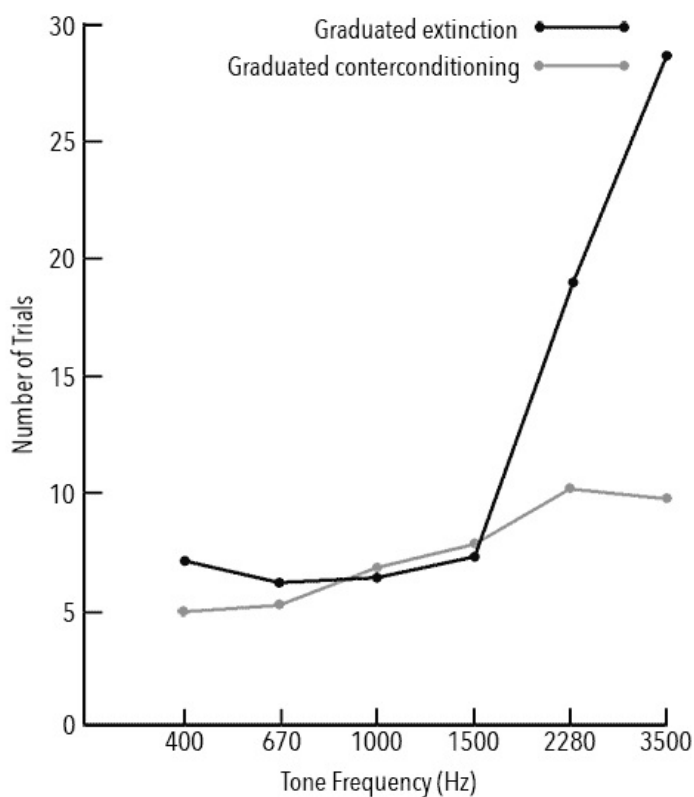


Figure 7-1. Mean number of nonreinforced trials required to eliminate response suppression at each of the stimulus values of the aversive hierarchy through extinction and counterconditioning procedures. Poppen, 1968.

graduated extinction and graduated counterconditioning. Emotional responsiveness in both groups was eliminated at an equally rapid rate toward stimuli of low and of moderate threat value. When confronted with severe threats, however, subjects administered the counterconditioning treatment required substantially fewer exposures to overcome their fearfulness.

In the behavior therapy literature operations in which aversive stimuli are presented alone are typically designated “extinction,” whereas multiple procedures combining fear-arousing and positive stimuli are labeled “counterconditioning.” These methods are often discussed as though they involved fundamentally different processes. Actually, counterconditioning is a major factor in extinction. That is, during nonreinforced repetitions of a stimulus, temporary inhibitory

states and inevitable changes in the stimulus complex eventually elicit competing responses of sufficient strength to replace original reactions. According to this interpretation of the process, conventional extinction procedures often involve a form of unguided counterconditioning. A major advantage of methods that include counter-response elicitation is that the occurrence and strength of competing activities are managed rather than left to fortuitous factors; this permits greater control over desired outcomes.

#### *CONCEPTUALIZATION OF THE COUNTERCONDITIONING PROCESS*

Although applications of the principle of counterconditioning were reported by Jones as early as 1924, the approach received little attention until Wolpe (1958) devised an ingenious procedure that greatly increased the range of disorders subject to treatment by this method.

Based on careful analysis of the stimulus determinants of emotional responsiveness, the therapist constructs a ranked list of situations to which the client reacts with increasing degrees of anxiety or avoidance. When counterconditioning is based on relaxation procedures, the therapist induces in the client a state of deep relaxation, which presumably counteracts anxiety, and asks the client to visualize the weakest item in the hierarchy of emotion-arousing stimuli. If the client experiences any emotional disturbance the aversive scene is promptly withdrawn, relaxation is reinstated and then the item is repeatedly presented until it ceases to evoke anxiety; if the relaxation remains unimpaired in the imagined presence of the threat, the client's emotional responses to the next item in the hierarchy are extinguished and so on throughout the graduated series. In this manner the intensity of aversive

stimuli is increased from session to session until the most threatening events have been completely neutralized. Further details of this particular method and its variant forms have been published by Wolpe (1961), Wolpe & Lazarus (1966), and Lazarus (1964).

Wolpe considers three sets of variables essential for achieving consistent counterconditioning outcomes. First, it is necessary to select an anxiety-neutralizing stimulus capable of inducing a competing condition of sufficient strength to overcome the reactions ordinarily evoked by the emotion-arousing cues. Second, the aversive events are presented initially in attenuated forms so that emotional responses to be counteracted are relatively weak and hence can be readily extinguished. The arousal potential of more aversive situations supposedly is progressively



reduced by generalization of anxiety extinction from preceding weaker items. Through successive advances of extinction and generalization, stimuli of increasing aversiveness can be gradually neutralized without evoking anxiety of an intensity difficult to countercondition. The third variable pertains to necessary temporal prerequisites, that is, both the anxiety reducing and the aversive stimuli must be contiguously associated.

As will be shown later, Wolpe's desensitization method has generally proved successful in modifying emotional behavior, but the theoretical speculations about the manner in which anxiety is acquired and the mechanisms governing the counterconditioning process (Wolpe, 1958) are largely disputed by empirical findings. In accord with Hullian formulations, Wolpe favors a drive-reduction theory of classical conditioning, and a

fatigue theory of extinction. In contrast to this view, experimental results (Mowrer, 1960; Solomon & Brush, 1956) clearly support a contiguity theory of conditioning, in that emotional responsiveness is best acquired and strengthened through association of a stimulus with shock onset rather than shock reduction. Although fatigue resulting from nonreinforced evocation of effortful behavior may foster the appearance of inhibitory responses in performance extinction, it is doubtful that sufficient fatigue, if any, can be generated by symbolic and autonomic responses to account for anxiety decrements achieved through distributed trials in symbolic desensitization treatments. A more plausible interpretation of extinction under the latter conditions is that emotional responses are gradually eliminated by deliberate elicitation of incompatible responses and by superimposing

aversive stimuli onto positive events that mitigate self-generated arousal.

In accord with most traditional theories of psychopathology, Wolpe (1958) adopts the position that anxiety is a major causal determinant of inappropriate avoidance behavior. Anxiety is defined principally in terms of over-reactivity of the sympathetic division of the autonomic nervous system. Counterconditioning effects are explained by Wolpe in terms of reciprocally inhibitory processes occurring at the level of the autonomic nervous system. This conceptual scheme is mainly based on the assumption that sympathetic and parasympathetic responsiveness are generally physiologically antagonistic. It is further assumed that muscular relaxation, sexual behavior, assertive responses, and other pleasurable stimulation elicit parasympathetic responsiveness which, if sufficiently strong, inhibits the

predominantly sympathetic responses of anxiety.

It is important to bear in mind that the psychological principle of counterconditioning and the efficacy of procedures based on this principle are independent of the validity of Wolpe's neurophysiological speculations. Indeed, contrary to Wolpe's peripheral theory of anxiety, research findings cited earlier clearly indicate that autonomic and avoidance responses are coeffects rather than causally linked events. To the extent that extinction is governed by mutually inhibitory mechanisms, they are more likely to operate subcortically rather than in the autonomic system. It is interesting to note in this connection that some evidence exists (John, 1961) for two reciprocally inhibitory arousal systems in the reticular formation which mediate defensive and approach behavior.

## Controlling Variables in Desensitization

A number of laboratory experiments have been conducted to determine whether the component variables in desensitization procedures are necessary, facilitative, or irrelevant to extinction outcomes associated with this method. Unfortunately, results of many of these studies are uninterpretable because their sample sizes are much too small to prove anything, outcome measures are inadequate, treatment conditions are applied for exceedingly brief periods, and other methodological deficiencies exist that are typically excused on the grounds that the experiments are merely exploratory. Although such studies are usually acknowledged by the authors to be technically insufficient, the resultant findings are rarely dismissed as having little evidential value. The findings of some experiments that are otherwise well designed may be

misleading because the behavioral test used requires, at the most, brief contact with the feared object (e.g., touching or holding a snake). Treatment conditions that appear equally efficacious on the basis of a weak criterion test might yield differential outcomes if more threatening and demanding performance tasks were utilized.

The research discussed in subsequent sections is mainly confined to experiments that are sufficiently well designed to permit meaningful interpretation of the data. Many of these studies employ the snake phobia paradigm originally devised by Lazovik & Lang (1960). This type of phobic disorder is especially well suited for clarifying the role of variables considered to be influential contributors to the counterconditioning process. The reason for this is that the incidence of snake phobias is relatively high, the strength of

avoidance behavior can be objectively measured, and extra-experimental encounters with snakes that might confound treatment effects rarely occur or can be easily controlled.

### *ROLE OF ANXIETY-COMPETING RESPONSES AND EXTRANEOUS PROCESSES*

If, in fact, desensitization methods involve a counterconditioning process, then contiguous association of threatening stimuli with anxiety-inhibiting responses would constitute a necessary condition for rapid elimination of avoidance behavior. In a relatively complex treatment containing numerous elements it is possible that any number of variables, operating either singly or in combination, may be responsible for observed outcomes. Thus, for example, avoidance behavior may be reduced to some degree by relaxation training alone, by gradual exposure to progressively more threatening situations, or by

expectations that participation in a treatment program will result in favorable changes. Another possible source of influence is the social relationship that develops between change agents and their clients. In order to test whether desensitization methods achieve their effects through counterconditioning or extraneous processes, Davison (1968) conducted an experiment that proceeded in the following manner.

Snake-phobic students were individually matched on the basis of the strength of their avoidance behavior toward a snake and assigned to one of four conditions. For students who received the treatment that fulfilled counterconditioning requirements, imaginal representations of progressively more threatening interactions with snakes were contiguously paired with muscular relaxation, as in the standard



practice. A second group participated in a pseudo-counterconditioning treatment that was identical to the procedure employed in the first condition except that the symbolic contents paired with relaxation were childhood experiences entirely unrelated to snakes. Because of the widespread belief that anxiety disorders represent derivative manifestations of reactivated infantile conflicts, it was possible to use snake-irrelevant items without jeopardizing the verisimilitude of the treatment approach. This group provided a control for the effects of extraneous variables associated with relationship experiences, expectations of beneficial changes, relaxation training, or other possibly unrecognized factors. The third group was administered the same set of graded fear-provoking scenes involving snakes but in the absence of relaxation. This exposure condition primarily served as a control for the influence of

repeated exposure to threatening stimuli. Finally, a small control group of students participated in the assessment procedures without receiving any form of intervening treatment.

In order to equate the groups for durations and specific patterns of experiences, students in the pseudo-counterconditioning and the exposure groups were yoked to their matched partners in the counterconditioning treatment, whose progress determined the total number of treatment sessions, the length of each session, and the number and duration of each stimulus exposure. After the treatments were completed students were readministered the behavioral test involving 13 progressively more intimate interactions with a snake. Only the subjects for whom fear-arousing events were paired with relaxation displayed substantial increases in snake-approach behavior, whereas students in the

pseudo-counterconditioning, exposure, and control groups failed to achieve any significant reductions in avoidance responses.

The question of whether extinction of avoidance behavior through desensitization is attributable to relationship influences or other unsuspected variables has also been investigated by Lang and his associates. In the initial project (Lang & Lazovik, 1963; Lang, Lazovik, & Reynolds, 1965), which involved snake-phobic adults, one group received the standard form of desensitization treatment; a second group participated in a form of relationship therapy in which, after receiving a plausible explanation for their placebo treatment, they discussed experiences unrelated to their phobia in the context of deep relaxation. A no-treatment control group was also included.

Control subjects and those who received the pseudotherapy showed no significant changes either in their snake-avoidance behavior or on any of the self-report indices of anxiety. By contrast, students who received the counterconditioning treatment exhibited greater snake approach behavior relative to the combined results of the latter two groups, and they experienced less anxiety about snakes. However, results of this study must be accepted with reservations for several reasons. During the measurement of phobic behavior the tester modeled each approach response before requesting the subject to perform the same task. Although the amount of modeling may not be sufficient to reduce inhibitory responses in control subjects, it may facilitate approach behavior in subjects whose avoidance tendencies had been weakened to some extent through prior counterconditioning. Results of

other studies (Wolpin & Raines, 1966) are similarly confounded by extensive modeling of intimate interactions with feared objects during the administration of avoidance tests. It also appears from the magnitude of change scores that some of the group differences at a borderline level of significance would most likely prove nonsignificant had desensitization been compared to pseudotherapy alone rather than combined with the nontreated control group. There is no question, however, that students who had been successfully desensitized to most of the items in the anxiety hierarchy achieved substantially greater reductions in avoidance behavior than subjects in either the relationship or control conditions.

Lang (1968) has devised a self-directed desensitization procedure that makes it possible to manage counterconditioning variables more

reliably and permits greater experimental control over extraneous processes. Graduated sequences of threatening situations and relaxation instructions are prerecorded on magnetic tapes that are controlled by the person undergoing the treatment. After relaxation instructions have been played an anxiety-arousing item is automatically presented. Whenever subjects signal distress they are instructed to stop visualizing the scene, relaxation is reinduced, and then the item is repeated. If subjects signify an increase in anxiety during reexposure to the same aversive scene they are returned to the preceding item in the hierarchy. As long as subjects signal decreasing arousal to successive exposures to a given scene, it is repeatedly presented until it ceases to elicit emotional responses. In this way, subjects manage their own desensitization treatment throughout the graduated series.

The above procedure was primarily designed for research purposes, but a case report by Migler & Wolpe (1967) suggests that it may have clinical applications as well. A male client who was unable to participate in staff meetings because of severe public speaking anxieties successfully desensitized himself at home through the use of a modified tape recorder that contained prerecorded relaxation instructions and scenes of increasingly threatening public speaking situations. These preliminary clinical data are corroborated by results from comparative studies by Melamed & Lang (1967), Donner (1967), and Krapfl (1967), who found that self-administered desensitization produced the same amount of reduction in avoidance behavior as the standard, socially administered form. Lang has also successfully employed the semiautomated procedure to investigate changes in autonomic indicants of

emotional arousal through the course of the desensitization process.

Results of a study designed by Moore (1965) to assess some of the factors operative in the desensitization method are of interest because they essentially replicate the findings cited above with a radically different type of emotional dysfunction. Asthmatics who had proved unresponsive to medical treatment were given either relaxation alone, relaxation combined with suggestions that they would show both progressive improvement in respiratory function and reduced sensitivity to situations that evoke asthmatic attacks, or they received the counterconditioning treatment. In the latter procedure deep relaxation was paired with graded situations based on respiratory difficulties, infective and allergic factors, and stress-provoking events. Each patient was administered two of the



treatments over a period of two months according to an experimental design that presented the methods in every combination and in every order. The effects of these various procedures were assessed in terms of subjective reports of asthmatic attacks and two objective measures of respiratory function. These included the Maximum Peak Flow and the percentage this performance represented of optimal flow after an inhaled dose of isoprenalin.

The changes accompanying the different treatment conditions are summarized graphically in Figure 7-2. All three treatments produced reductions in attacks of wheezing according to clients' self-reports, but only the counterconditioning method significantly improved respiratory function based on physical measurements.

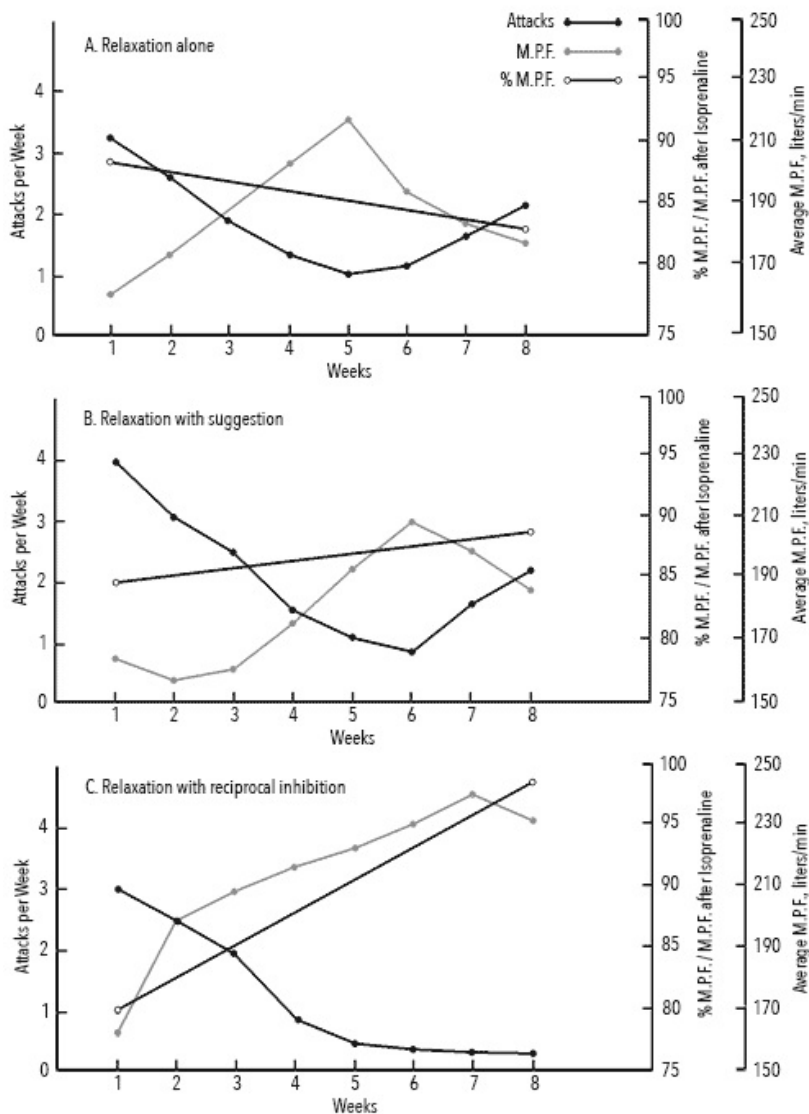


Figure 7-2. Changes in reported asthmatic attacks, and two physiological measures of respiratory function associated with each of three treatment conditions. Moore, 1965.

Although the findings reported by Davison (1968) and Rachman (1965) would seem to indicate that relaxation plays a highly influential role in symbolic desensitization, this conclusion requires qualification in the light of results of a study conducted by Schubot (1966). It will be recalled that in Davison's experiment, subjects in the exposure condition were often required to continue visualizing disturbing scenes after they had signaled anxiety, in order to equalize exposure durations in the different treatments. Miller (1967) has shown that the desensitization procedure achieves equally beneficial results regardless of whether the subject or the experimenter controls the termination of aversive stimuli. It is conceivable, however, that if subjects who were administered only the aversive stimuli had been allowed to terminate threatening scenes before they generated excessive anxiety, which

was the procedure followed for the counterconditioning group, repeated exposure alone eventually might have produced some extinction of avoidance behavior. To test this notion, Schubot (1966) compared the elimination of phobic behavior in groups of adults who were administered either exposure to anxiety-provoking scenes paired with relaxation or exposure alone under conditions where aversive stimuli were promptly terminated for all subjects whenever they signified distress.

Interpretation of results of this otherwise well-designed experiment is somewhat complicated by lack of a yoked exposure condition in which visualization durations are externally controlled independently of subjects' emotional responses. Nevertheless, the available data (Figure 7-3) demonstrate that relaxation was essential for modifying extreme phobic behavior, but it did not

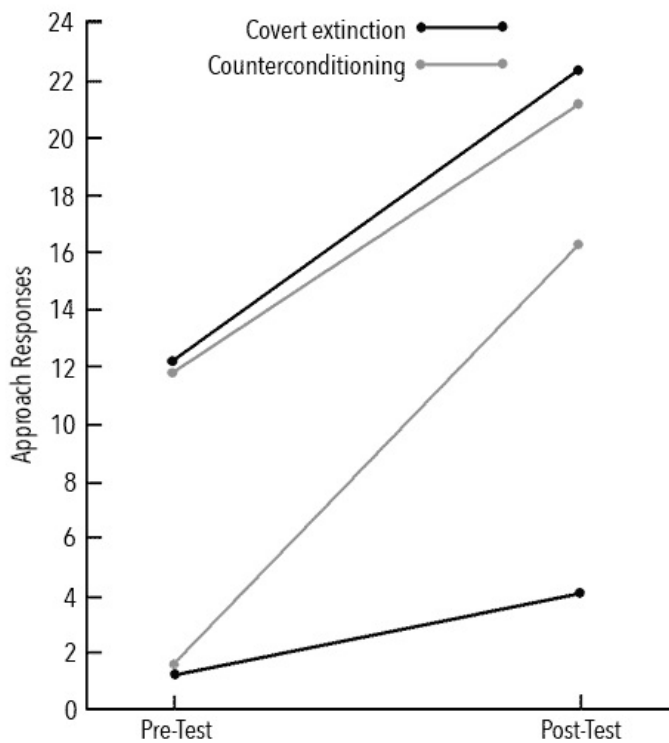


Figure 7-3. Differential responsiveness of moderate and severe phobic subjects to counterconditioning and extinction procedures. Schubot, 1966.

facilitate extinction of avoidance responses of moderate strength.

It is of considerable interest to find that *covert extinction* operations, in which conditioned emotionality is eliminated by repeated symbolic reinstatement of threatening events below the stress threshold level, significantly reduce avoidance behavior. If people could extinguish inappropriate emotional reactions by thought alone, one would expect such disorders to be much less prevalent. To be sure, under naturalistic conditions people rarely construct hierarchies of emotionally disturbing situations and systematically engage in covert extinction trials. Moreover, on the occasions when they do think about threatening events they are apt to revivify the aversive consequences that accompanied their behavior, thereby reinforcing rather than weakening their fears. Because of the relevance of

covert extinction for the general issue of symbolic control of overt behavior, it would be of importance to determine whether this phenomenon is easily reproducible and its limiting conditions.

Several investigators have found that the components of desensitization separately achieve reductions in avoidance behavior, but they do not gain additional efficacy in combination with each other. In some of these experiments, however, the behavioral test is exceedingly brief, experimenters lack experience in the use of the method (Cooke, 1968), or subjects receive limited training in relaxation (Proctor, 1968). Other studies, such as the one reported by Folkins, Lawson, Opton, & Lazarus (1968), suffer from methodological deficiencies and a tendency to read more into the data than they actually yield. Folkins and his associates measured self-reports and

physiological responses of students to a film depicting industrial accidents after they had received one of four types of treatments. For subjects in the simulated desensitization condition, brief scenes from the film were presented verbally in the context of muscular relaxation and pleasant imagery during three sessions. Unlike the standard procedure, however, the stressful stimuli were presented by tape recording without regard to the students' emotional reactions. The second condition included both the positive imagery and exposure to the aversive scenes. A third group received only relaxation training, while students in the fourth condition served as nontreated controls.

A treatment effect was obtained on one of three self-report indicators of stress reactions, and on the skin conductance measure. No significant differences were found, however, in heart rate



responses. The authors conclude, on the basis of visual inspection of the data rather than statistical evaluation of inter-group differences, that complete desensitization is a less effective stress reducer than either of its components, relaxation or cognitive rehearsal, and that of the two elements, cognitive rehearsal is the more powerful. They further suggest that insight-oriented approaches may be superior to desensitization techniques. These conclusions are supported by neither the data nor the treatment operations. All treatments probably reduced emotional responding compared to the control group, but it appears from the summary data that the treatments do not differ significantly among themselves. With regard to the procedures, since the “cognitive rehearsal” involved both stimulus exposure and positive imagery that has counterconditioning potential, this method

actually represents a variant form of desensitization. It might also be noted in passing that if visualization of aversive stimuli is conceptualized as an insight operation, then the term has little meaning.

The various findings, taken as a whole, indicate that relaxation is a facilitative rather than a necessary condition for elimination of avoidance behavior. Evidence that relaxation often hastens the extinction process does not verify that the benefits derive from the explicit manipulation of muscular activities. Indeed, Rachman (1968) has argued that feelings of calmness induced by the procedure rather than muscular relaxation per se is the decisive factor at work. In this alternative explanation, relaxation instructions and presentation of pleasant scenes to the imagination reduce affective arousal which attenuates responsiveness to aversive stimuli. This

interpretation is consistent with the view advanced in this book that behavioral changes are largely governed by central mechanisms rather than by peripheral processes.

If the competing activities that function to reduce the arousal capacity of threatening stimuli are, in fact, symbolically mediated, then certain changes in the standard desensitization practice may be advantageous. As Rachman suggests, greater emphasis would be placed on the development of tranquil and pleasant imagery than on motor relaxation exercises. This issue can be best resolved by laboratory studies of the anxiety- mitigating effects of positive imagery and muscular relaxation when used alone and in combination with each other.

#### *GRADUATED STIMULUS PRESENTATION*

Research discussed thus far discloses that

deconditioning effects occur even when social and expectancy influences are controlled, and that relaxation functions as a facilitative rather than as a necessary condition for change. The question of whether graduated presentation of aversive stimuli is a fundamental requirement of desensitization has not been systematically investigated. If the process of anxiety elimination through performance extinction and symbolic desensitization involves analogous processes, then reductions in avoidance behavior can be achieved, both by reexposure to progressively more threatening events and by repeated confrontation with the most feared situation at the outset. However, these two treatment strategies would be associated with markedly different amounts of anxiety elicitation. The more stressful confrontation method is apt to generate high levels of emotional arousal that are gradually

reduced with successive nonreinforced occurrence of fear- provoking events. On the other hand, when aversive stimuli are introduced in attenuated form and gradually increased to their full threat value, extinction effects can be attained with minimal anxiety arousal. Indeed, by initially presenting an aversive stimulus in a weak form so that it will not elicit any anxiety, and by increasing its duration and intensity in small, progressive steps, it should be possible to extinguish emotional responsiveness without the occurrence of emotional responses.

Anxiety-free extinction in aversive situations has received little study. Experiments with infrahuman subjects (Kimble & Kendall, 1953; Poppen, 1968) have shown that exposure to stimuli graduated in aversiveness produces more rapid extinction of emotional behavior than when they are repeatedly presented at their full value.

Terrace (1966) has provided considerable evidence that discriminative behavior can be established with virtually no responses to negative stimuli, through the use of progressive stimulus change procedures. Thus to alter the responses made to a negative stimulus ( $S^-$ ) it is gradually introduced into a positive stimulus complex ( $S^+$ ) that evokes a desirable form of behavior. The elements in the latter stimulus are progressively reduced until eventually  $S^-$  alone produces the responses that were originally controlled by  $S^+$ . Evidence that stimulus control can be transferred by this method without negative responses brings into question the widely shared belief that the occurrence of anxiety responses is a necessary condition for their elimination. It is essential, however, that the stimuli that are being neutralized should have anxiety-arousing potency in their original form. One would expect little

therapeutic gain from programs that fostered nonemotional reactions to stimuli that ordinarily do not exercise control over emotional responses. In other words, the requirements pertain to the motivational properties of stimuli rather than to the elicitation of emotional responses.

In the counterconditioning paradigm the introduction of anxiety-competing responses presumably enables people to tolerate higher levels of threat without responding anxiously. Some suggestive evidence that this does, in fact, occur is furnished by Davison's study (1968), in which subjects in different treatment conditions were individually yoked, and hence received the same number, order, content, and duration of stimulus exposures. Students who were administered threatening scenes in the context of deep relaxation signaled distress on 27 percent of the stimulus presentations, whereas those who

received the same items without relaxation registered anxiety on 61 percent of the trials. Schubot (1966) reports similar differences in anxiety elicitation, under conditions where subjects themselves controlled the termination of aversive scenes, between subgroups that displayed extreme avoidance behavior. The rate of anxiety- signaling by markedly avoidant subjects who received exposure only was three times as high as that shown by their equally fearful counterparts for whom exposure was paired with relaxation. Moreover, the emotional reactions of the latter group were neutralized more rapidly to individual scenes and they completed significantly more items in the hierarchy during the same period of time. Interestingly, the anxiety-signaling rates did not differ between the moderately fearful subgroups who achieved comparable gains in approach behavior. Consistent with the view



expressed earlier regarding anxiety responding during extinction, Schubot found that frequency of anxiety elicitation was inversely related to degree of extinction of avoidance behavior.

Assuming that subjects' imaginal self-stimulation corresponds closely to scenes presented by the experimenter, the above findings indicate that an approach that combines graduated stimulus presentation with deliberate elicitation of anxiety-neutralizing responses is best suited for reducing avoidance behavior with minimal stress. In evaluating differential treatment approaches one must consider not only the rate at which they modify avoidant behavior, but also the emotional costs to the client. The latter criterion is particularly important if a given method achieves relatively quick results but drives away many of the participants because it engenders excessive distress.

Findings of an experiment by Krapfl (1967) are relevant to several of the issues discussed above. Snake-phobic subjects received socially administered desensitization or several forms of desensitization conducted via tape recordings. In the semiautomated treatments the aversive stimuli were presented either in order of increasing aversiveness as in the standard procedure, in a descending arrangement from most to least anxiety- arousing, or in a random order. Two control groups, one that received no treatment and another that was presented pleasant but snake-irrelevant stimuli, were also included. Behavioral avoidance tests were administered after five sessions of treatment and again six weeks later.

Subjects in all treatment conditions achieved enduring increases in approach behavior and differed in this respect from the two control

groups (Figure 7-4). No significant differences were found among the experimental conditions, except that the randomized procedure consistently produced weaker effects than did procedures employing the ascending aversive order. Although desensitization that proceeded from most to least aversive items proved efficacious on behavioral indices, it elicited initially a high level of emotional responding and negative reactions to the procedure. In clinical applications this method, therefore, runs a higher risk that clients might terminate their participation.

#### *TEMPORAL FACTORS IN DESENSITIZATION*

If stimulus events are to lose their arousal capacity through a process of counterconditioning, then emotion-provoking and emotion-counteracting stimuli must be contiguously associated. Melvin &

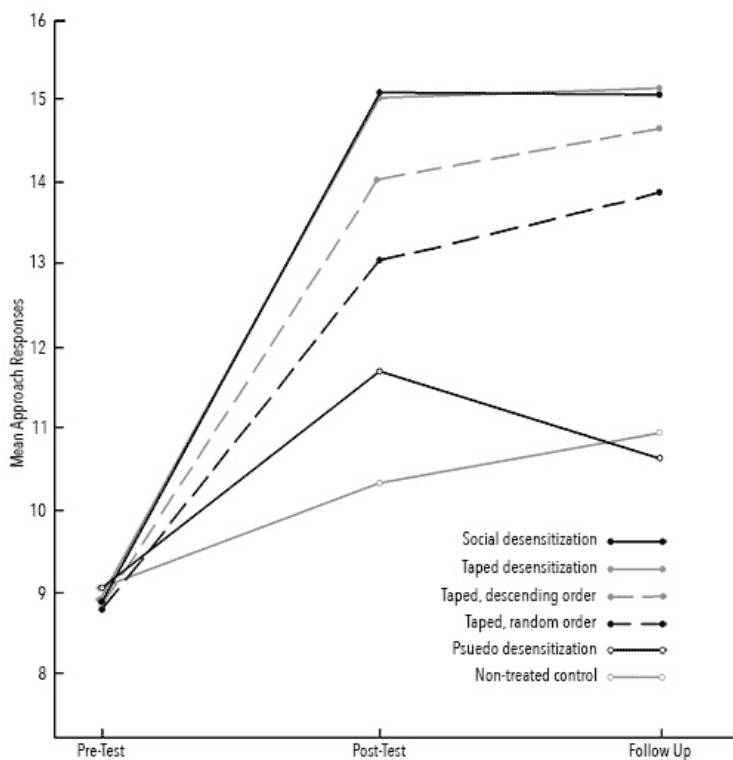


Figure 7-4. Mean number of approach responses performed by subjects in each of four treatment conditions and in two control conditions. Plotted from data of Krapfl, 1967.

Brown (1964) found that repeated paired presentations of a positive reinforcer with a physically noxious stimulus reduced its aversive power, but temporally dissociated presentations of these same events did not alter its negative valence. Moreover, reduction in aversiveness varied directly with the number of paired associations. It is evident, however, that the temporal relationship between stimulus events in the standard desensitization procedure, while meeting the association requirement, differs markedly from that generally considered optimal for classical conditioning. In the latter case, conditioned responses are most readily produced when the CS precedes the UCS by a very brief interval. By contrast, in the desensitization procedure, relaxation, which is supposed to serve the same function as UCS-induced states, is maintained continuously, whereas the conditioned

aversive stimuli are presented briefly at irregular intervals.

If one equates classical conditioning with a limited set of operations in which stimulus events are presented episodically and in very close temporal conjunction, then obviously Wolpe's procedure does not fulfill these specific requirements, nor, incidentally, does a large body of literature demonstrating classical aversive conditioning. For example, experiments in which animals are shocked in compartments painted a certain color, the CS (i.e., the color cue) is continuously present and the painful stimulation is experienced intermittently. Similarly, conditioned emotionality can be extinguished when aversive cues and positive stimuli that elicit antagonistic responses are both continuously present (Farber, 1948).

In order to establish conditioned responses it is essential that the effects induced by a UCS occur in conjunction with the CS. Under circumstances where the events to be conditioned to the CS are controlled almost exclusively by the UCS then a close temporal relationship between these two sets of stimuli is required. However, in human learning, emotional responses are generally elicited not only by an external UCS but also by symbolic representations of aversive or pleasurable experiences. The influential role of self-generated arousal in classical conditioning is indicated by studies showing that conditioned responses can be developed by having subjects merely associate a CS with imagined stimulation in the absence of the appropriate UCS; conversely, conditioned responses generally fail to develop, even though the CS and UCS are presented repeatedly under optimal temporal contiguity, if

subjects do not recognize that the two stimuli are related. Research bearing on these issues and alternative interpretations of empirical findings are discussed more fully in the concluding chapter. To the extent that self-generated stimulation substitutes for, or supplements, external inputs, conditioning can occur under a variety of external temporal arrangements. The question of whether desensitization outcomes are achieved through conditioning in the traditional sense should perhaps be held in abeyance until the psychological processes underlying classical conditioning have been more adequately explicated.

In addition to the temporal issue, questions also arise about the nature of the conditioned response. It is apparent from laboratory studies of classical conditioning that the conditioned response is rarely, if ever, identical to the behavior



originally evoked by the unconditioned stimulus. For example, a painful shock delivered to a person's forearm following a tone will typically elicit autonomic reactions, arm retraction, and vocalization of pain. After a series of trials, presentation of the tone alone will most likely elicit autonomic and central arousal without the motor and vocal elements. Indeed, if the organism were so constructed that a conditioned stimulus had the capacity to create the tissue damage accompanying physically injurious events, then learning would have self-destructive rather than survival value. A conditioned stimulus not only evokes merely a component part of the original reaction, but it often activates anticipatory responses that bear little resemblance to the unconditioned response. It would, therefore, seem more plausible to view conditioning outcomes as reflecting the operation of mediating mechanisms

rather than the direct coupling of stimuli with responses evoked by other events. Since responses to an aversive stimulus contain a self-generated component one would not expect them to be identical to those produced by the external stimulus.

Similarly, after an aversive stimulus has been repeatedly paired with relaxation, it is exceedingly unlikely that formerly threatening cues will promptly evoke muscular flaccidity. Rather, such cues no longer generate emotional arousal. The foregoing interpretation of counterconditioning differs from explanations based on Guthrie's theory (1935) or Wolpe's model (1958), both of which assume a recoupling of conditioned responses to stimuli.

#### *INFLUENCE OF SOCIAL REINFORCEMENT AND COGNITIVE VARIABLES ON DESENSITIZATION*

The studies reviewed thus far investigated the influence of traditional learning variables on desensitization processes. This class of determinants is primarily concerned with stimulus events, that is, their content, intensity, valence, frequency, mode of presentation, and temporal relationship. Learning variables often exert differential effects on behavior depending upon concomitant social and cognitive variables. The relationships obtained between responses and their programmed stimulus consequences, for example, may vary considerably when the same reinforcing stimuli are administered by persons who vary in prestige (Prince, 1962), attractiveness (Marder, 1961), sex (Epstein & Liverant, 1963; Stevenson, 1965), ethnic status (Smith & Dixon, 1968), and friendship (Hartup, 1964; Patterson & Anderson, 1964). Similarly, informational variables may be influential in determining

responsiveness to stimulus presentations. For these reasons, the behavioral changes effected by desensitization cannot be solely attributed to the effects of stimulus pairings.

Not only is learning multiply controlled by interacting variables, but the willingness to perform responses that have been acquired can be affected by a host of motivation-related influences. Subtle situational demands, self-imposed achievement pressures, expectations that a given method will result in beneficial changes, and the desire to please conscientious therapists are often invoked as unsuspected determinants of psychotherapeutic changes. Such factors are most likely to exercise some control over existing behaviors that persons can readily perform should they wish to. On the other hand, motivational influences alone will not produce response patterns that are lacking, nor will they meet with

much success in restoring severely inhibited behaviors that have proved intractable to repeated social pressure and persuasion. In the latter case, requisite learning experiences must be provided.

The prevalent tendency to view multiple determination of behavior in terms of rival preferences for certain component variables has given rise to much unproductive argument and research. This is particularly true of investigations that are explicitly designed to negate learning influences. In an effort to demonstrate that expectations alone regarding treatment might account for reductions in avoidance behavior in desensitization therapy, Efran & Marcia (1967) administered to snake-fearful students a pseudotherapy in which they were occasionally shocked while observing blank slides in a tachistoscope that they were led to believe

contained pictures of the phobic stimuli presented at subliminal levels. Half of these subjects were assigned to a “low expectancy” condition in which they were informed that the treatment lacked a crucial element, whereas subjects in the “high expectancy” condition were told that the treatment yielded promising results. To further enhance the expectancy manipulation, subjects were shown fictitious polygraph records indicating that their physiological reactivity to the “subliminal stimuli” had decreased over the course of treatment. A control group participated in the assessment procedures without exposure to any of the experimental procedures. Unlike previous researchers, who have tested changes in avoidance behavior toward live reptiles that have some realistic threat value, for some unexplained reason Efran & Marcia used lifeless specimens of the phobic objects. Lifeless objects are likely to

arouse relatively weak inhibitions that would be especially susceptible to motivational manipulations.

On the basis of a partial analysis of the data, the authors conclude that positive expectations can reduce fear responses. This finding is considered especially significant since punishing subjects for reacting fearfully should, if anything, increase their avoidance behavior.

In point of fact, the three groups of subjects did not differ significantly in degree of self-reported fear experienced during the test of approach behavior. The authors attribute this negative finding to a lack of independence between fearfulness and total amount of approach behavior performed and to the susceptibility of this measure to situational demands. The methodological confounding of the dependent

variable could have been easily avoided by measuring the degree of fear associated with each specific approach response rather than obtaining a single aggregate rating after the avoidance test was completed. Considering that expectancy cues, through which situational demands are most frequently conveyed (Rosenthal, 1966), were explicitly manipulated in this study, it seems illogical to discount the absence of differences on a measure because of its susceptibility to situational influences. Statistical comparisons were also made on measures of approach behavior and interview ratings of improvement between various combinations of groups except high and low expectancy, the conditions of major relevance to the expectancy hypothesis. Complete analysis of their published data reveals that experimental subjects achieved a higher rate of improvement than the controls, but the high and low expectancy



groups did not differ significantly from each other on either of these measures. In direct contrast to the authors' conclusion, the results show in fact that the increases in approach behavior produced toward the attenuated threats, though in the predicted direction, were essentially comparable regardless of whether subjects expected the treatment to be effective or ineffective. It should also be noted that "principles of conditioning" would not lead one to predict that several random pairings of shock with a blank card interspersed in a hundred trials should necessarily increase avoidance of snakes or spiders. Indeed, the opposite outcome is entirely possible considering that subjects were led to believe that unconscious responses to subliminal phobic stimuli would be followed by painful shocks, whereas the occurrence of the assumed stimuli did not result in aversive experiences on 84 of the trials! It remains

an open question whether the authors' procedure is more likely to condition anxiety relief, rather than aversive reactions, to whatever the subjects were imagining to the blank slides.

Research in which social and cognitive variables are studied as components of counterconditioning procedures can provide valuable information about the degree to which these different factors, both singly and in combination with each other, facilitate extinction outcomes. If it were found that response to desensitization was partly determined by induced expectations and other informational inputs, their mechanisms of action would still remain to be explained. Since induced negative expectations tend to decrease behavioral participation (Kelley, 1950), supposedly cognitive variables might affect conditioning outcomes mainly through peripheral processes, by reducing attentiveness and by

eliciting only halfhearted adherence to required procedures.

A study by Valins & Ray (1967), designed to demonstrate that cognitive labeling of one's internal physiological reactions can affect avoidance behavior, is likewise marred by methodological deficiencies that yield data easily subject to misinterpretations. According to the authors' reasoning, to the extent that persons can be led to believe that they are no longer affected internally by a feared object, they will consider their fear to be unwarranted and accordingly reduce their avoidance behavior. To test this notion, paid volunteers who rated themselves as fearful of snakes were shown pictures of increasingly fearsome snakes as well as slides with the word "shock" followed by shock stimulation. One group received false heartbeat feedback suggesting that their heart rates were unaffected

by snake stimuli but adversely affected by shocks. A control group was exposed to the identical tape recording except that subjects were informed that they were hearing meaningless sounds rather than their internal reactions amplified. All subjects were then tested for approach responses toward a snake.

In order to provide a meaningful test of the cognitive labeling hypothesis it is essential to preselect subjects who, in fact, display emotional arousal and avoidance behavior toward snakes. It is of little value, for example, to demonstrate that subjects who do not fear snakes will perform approach responses after being informed that they are internally unaffected by pictures of snakes. On the other hand, if misinforming fearfully avoidant subjects that they are no longer internally affected by conditioned aversive stimuli produces significant reductions in avoidance behavior, then

cognitive labeling processes might serve as contributory influences in desensitization treatments. Because of the absence of objective evidence concerning subjects' initial fears of snakes, this study provides no basis for judging whether cognitive labeling is an irrelevant, weak, or strong variable. Since 44 percent of the control subjects successfully performed the terminal approach task, it is evident that a sizable proportion of the sample was completely fearless to begin with. Other investigators have similarly found that approximately 40 percent of subjects who label themselves as fearful of snakes turn out to be relatively fearless, much to their surprise, when administered a behavioral test.

Contrary to the authors' conclusion that "cognitions about internal reactions are important modifiers of behavior," the heart-rate feedback and the control group did not differ significantly in

approach behavior. When subjects who reported that they had previously touched a snake were excluded from the sample, a difference emerged; but the effect cannot necessarily be attributed to cognitive labeling, because the independent variable in the reconstituted groups includes both labeling and self-selection influences. A number of unknown factors associated with accuracy of past recall may enter in as plausible determinants. Results of a second experiment also provide limited evidence, because subjects' initial fearfulness was never objectively assessed, and treatment effects were not evaluated by the amount of snake approach behavior but by the amount of money required to induce subjects merely to touch a snake, a relatively weak behavioral requirement.

Unlike desensitization, which eliminates fear arousal through nonreinforced reexposures to

subjective threats, the cognitive approach discussed above attempts to produce behavioral changes by mislabeling existing emotional responsiveness. Any fear reduction resulting from deceptive feedback is apt to be short-lived unless the mislabeling occasions genuine changes in persons' anticipatory arousal reactions. If our assumption is correct that conditioned stimuli generate emotional effects partly through an intervening self-arousal mechanism, then persons who are led to believe that they are no longer frightened by threatening events may subsequently reduce fear-arousing cognitions in response to these situations and thus diminish emotional responsiveness. A test of the self-arousal theory would require measurement of physiological and self-evaluative responses to conditioned aversive stimuli prior to, and after, cognitive mislabeling of internal states.

It should be remembered that cognitive claims have been mined many times with disappointing therapeutic yields. In the case of persons who display relatively weak inhibitions, erroneous explanations for physiological arousal to fear-provoking situations may lower their fear to the point where they can perform desired behavior. It is doubtful, however, that strong fears and inhibitions can be eliminated through either mislabeling internal reactions or attributing them to erroneous sources. A severe acrophobic, for example, may be temporarily misled into believing that his fear is no longer physiologically justified, but he is likely to encounter unnerving internal feedback when confronted with actual dreaded heights. There is little reason to expect that auspicious cognitions induced through deceptive labeling can substitute for corrective learning experiences in the stable modification of human



behavior.

Leitenberg, Agras, Barlow, & Oliveau (1969) provide evidence that therapeutically oriented instructions and social reinforcement may enhance the favorable response changes accompanying desensitization treatment. Snake-phobic students who were administered this procedure in the guise of an experiment on visualization achieved some reduction in avoidance behavior. The behavioral changes, however, were much greater for subjects who had been told that they were receiving a form of therapy that is successful in reducing fears and were praised for completion of items in the hierarchy. These social variables would not account for the success of self-administered desensitization (Melamed & Lang, 1967; Krapfl, 1967) unless, as the authors suggest, self-observed signs of progress assume a similar reinforcing

function.

### *TRANSFER OF EXTINCTION EFFECTS*

In the standard desensitization procedure emotional responses are extinguished to symbolic representations of fear-provoking situations. The treatment is not only directed toward attenuated forms of actual threats, but a relatively limited set of aversive stimuli is usually neutralized. Thus, for example, a person with a widespread social phobia may be desensitized to a dozen or so imagined situations which cannot possibly encompass the wide variety of interpersonal circumstances that provoke anxiety. Under these conditions extinction effects must generalize from thinking to acting and to situations that may contain some aversive elements which were never neutralized. Results of laboratory studies reviewed in preceding sections amply demonstrate that the

effects of symbolic desensitization do exert a significant influence on behavioral functioning. This is shown not only in improved performance but also in the fact that the number of hierarchical items successfully neutralized is positively correlated with degree of reduction in phobic behavior (Davison, 1968; Lang, Lazovik, & Reynolds, 1965). However, the extent of behavioral transfer is somewhat less than is frequently claimed on the basis of clinical observations.

Agras (1967) compared progress in desensitization and reduction in GSR responses to imagined test scenes with reports of performance in the actual feared situation by a small group of severely agoraphobic clients. Parallel changes were obtained on all measures, but improved performance in the real-life situations lagged behind extinction of anxiety to symbolic stimuli.

However, no consistent relationship was found between extinction of GSR responses to test items and reported behavioral change. Hoenig & Reed (1966) likewise found only partial correspondence between degree of reduction in phobic behavior and extinction of GSR responding when the phobic cues were represented by word labels, by imagination, and by the actual stimulus objects. These results are somewhat at variance with those reported by Rachman (1966), who tested subjects' self-reported anxiety to actual phobic stimuli immediately after they had been desensitized to imaginal representations of identical situations. Immediate generalization of anxiety reduction, as measured by fear reports, was found in 82 percent of the tests. Unfortunately, neither of the preceding studies involves a systematic test of avoidance behavior. Considering that avoidance behavior appears to be

influenced more by central than by autonomic mediators, reliance upon GSR responsiveness as the sole indicant of emotional arousal leaves much to be desired.

The apparent discrepancies in findings probably depend, in part, on differences in severity of phobic disorders, on whether one measures transfer in terms of improved performance or decreases in subjective distress, and on variations in the test procedures themselves. In an experimental design in which the same subjects are repeatedly tested with real stimuli following neutralization of imagined counterparts, any observed changes reflect the combined effects of performance extinction and symbolic desensitization. A precise appraisal of generalization unconfounded by test-produced changes would require desensitizing different groups of subjects to different levels in the

hierarchy of anxiety-provoking stimuli and then measuring their avoidance behavior in the actual feared situation that corresponds to their highest neutralized item. It would also be of interest to investigate generalization systematically as a function of degree of similarity between the imagined stimuli that are desensitized and those encountered in the real-life situation.

From knowledge of stimulus generalization one would not expect symbolic desensitization alone to exert vast transfer effects on instrumental responding. The degree of generalization will depend upon, among other factors such as similarity of mediators, the number of stimulus elements that different situations have in common. The traditional desensitization procedure involves too limited a sample of aversive stimulus elements, and the threats are neutralized in too attenuated a form to produce complete extinction

of emotional responses to threatening events encountered in actual life circumstances. The more that imagined treatment stimuli differ from their actual counterparts, the greater the transfer decrements. In accord with theoretical expectation, the overall evidence of laboratory studies (Agras, 1967; Bandura, Blanchard, & Ritter, 1969; Davison, 1968) shows that symbolic desensitization significantly reduces both subjective distress and avoidance behavior, but the number of approach responses that subjects can perform behaviorally is generally less than the number that have been successfully desensitized in imagination. Moreover, new approach responses are usually accompanied by relatively high anxiety when first performed.

It has sometimes been erroneously concluded, because of evidence that persons experience anxiety while performing responses which have

ceased to be threatening in symbolic form, that desensitization procedures do not achieve behavioral changes through extinction of the arousal potential of aversive stimuli. Since some transfer loss is operative in symbolic desensitization, this procedure is more likely to produce anxiety decrements rather than complete anxiety extinction. It has been repeatedly shown in laboratory studies that control subjects manifest undiminished anxiety when they perform their pretest approach responses a second time, whereas the same responses have lost much of their anxiety-provoking capacity for matched subjects after they have undergone desensitization treatment. To the extent that emotional arousal is reduced below the threshold which would activate avoidance responses, people will be able to engage in approach behavior, although with some residual anxiety.



In clinical practice symbolic desensitization is typically supplemented, either deliberately or unwittingly, with other procedures that tend to facilitate transfer effects. Symbolic desensitization is most often combined with performance extinction in which clients are urged to perform formerly inhibited behavior in carefully selected naturalistic situations as their fears extinguish to equivalent imagined threats. Even though change agents may not prescribe appropriate performance tasks, most people nevertheless eventually engage in approach behavior as their avoidant tendencies gradually weaken through treatment.

The desire to please the change agent and others may induce individuals to venture fear-provoking behavior. Positive social reinforcement and other rewarding outcomes accruing from successful performance of previously inhibited

activities may further extinguish any residual anxieties. In some cases desensitization is also supplemented by modeling procedures which, in themselves, can produce substantial vicarious extinction of emotional arousal. Thus, for example, in the frequently quoted case by Jones (1924), extinction of the boy's animal phobia was achieved not only by feeding him his favorite food in the presence of gradually increasing anxiety-arousing stimuli, but also by having him observe the positive response of other children as they played with the feared animal. Abrupt increases in approach behavior were associated with each of several modeling experiences.

In laboratory investigations, of course, these various "extraneous" influences are intentionally excluded. Because clinical outcomes are usually obtained by diverse combinations of methods, results are difficult to evaluate and to compare

with changes produced by single procedures under laboratory conditions. Nevertheless, findings bearing on transfer effects question the wisdom of relying solely upon symbolic desensitization for eliminating behavioral inhibitions and conditioned anxiety. When such methods are employed for clinical purposes they should be supplemented with graduated performance tasks, positive reinforcement of approach behavior to overcome initial reluctance of phobic persons to re-expose themselves to feared situations, and modeling procedures to further augment change in behavior. The use of supplementary procedures to obtain more consistent extinction outcomes will be discussed more fully later.

#### *COMPARATIVE EFFICACY OF COUNTERCONDITIONING PROCEDURES*

A number of experiments have been

specifically designed to compare outcomes of desensitization with those obtained by other methods of change. Paul (1966) reports a methodologically sophisticated study in which he compared, with appropriate controls, the relative success of desensitization and interview approaches for modifying debilitating performance anxiety in college students who experienced high distress in public speaking situations. The students were initially administered a series of personality questionnaires measuring both generalized emotional responsiveness and apprehension about speaking before an audience. Those who received high scores on the pretest measures participated in a relatively stressful situational test in which they were asked to deliver an impromptu speech before an unfamiliar audience including several clinical psychologists who, the

subjects were informed, would be evaluating their performance. Immediately prior to the test speeches the students' pulse rates and palmar sweating were measured; in addition, their actual speech performance was rated in terms of customary behavioral indicants of anxiety. On the basis of these scores, students were randomly assigned from stratified blocks to different treatment conditions and control groups.

One group of students received insight-oriented psychotherapy in which self-understanding and insight into the psychological determinants of their speech problems were pursued through conventional interpretive techniques. In order to assess the degree of change resulting from effects of social interaction and expectation of beneficial outcomes, a second group of students was assigned to an "attention-placebo" condition. During each session the latter subjects

were administered a placebo with strong suggestions that the drug which they had received effectively reduces the occurrence of anxiety in stressful situations. Following the administration of placebos subjects performed a supposedly stressful task that, in fact, produced feelings of drowsiness. For students in the counterconditioning group, relaxation was progressively associated with public speaking items on a temporal anxiety hierarchy, graded from reading about a speech two weeks before presentation to delivering a speech before a large audience. Students in a no-treatment control group merely participated in all of the assessment procedures.

The therapy was limited to five sessions distributed over a period of six weeks. Five practicing clinicians, who had considerable experience in the use of insight-oriented

treatment approaches, administered each of the three therapeutic procedures; this controlled for possible variability stemming from differences in therapists' characteristics. Following completion of the treatment series, the subjects' degree of physiological arousal, behavior dysfunctioning, and self-reported distress were measured in the threatening speech test situation; approximately six weeks later the original set of personality questionnaires was also readministered.

The percentage of students in each group who exhibited decreases in emotional behavior of a specified magnitude, as objectively assessed in the standardized test situation, is summarized graphically in Figure 7-5. Statistical analyses of a variety of measures, including magnitude of change as well as the percentage of cases displaying decrements in emotionality, reveal that subjects in all three treatment conditions showed

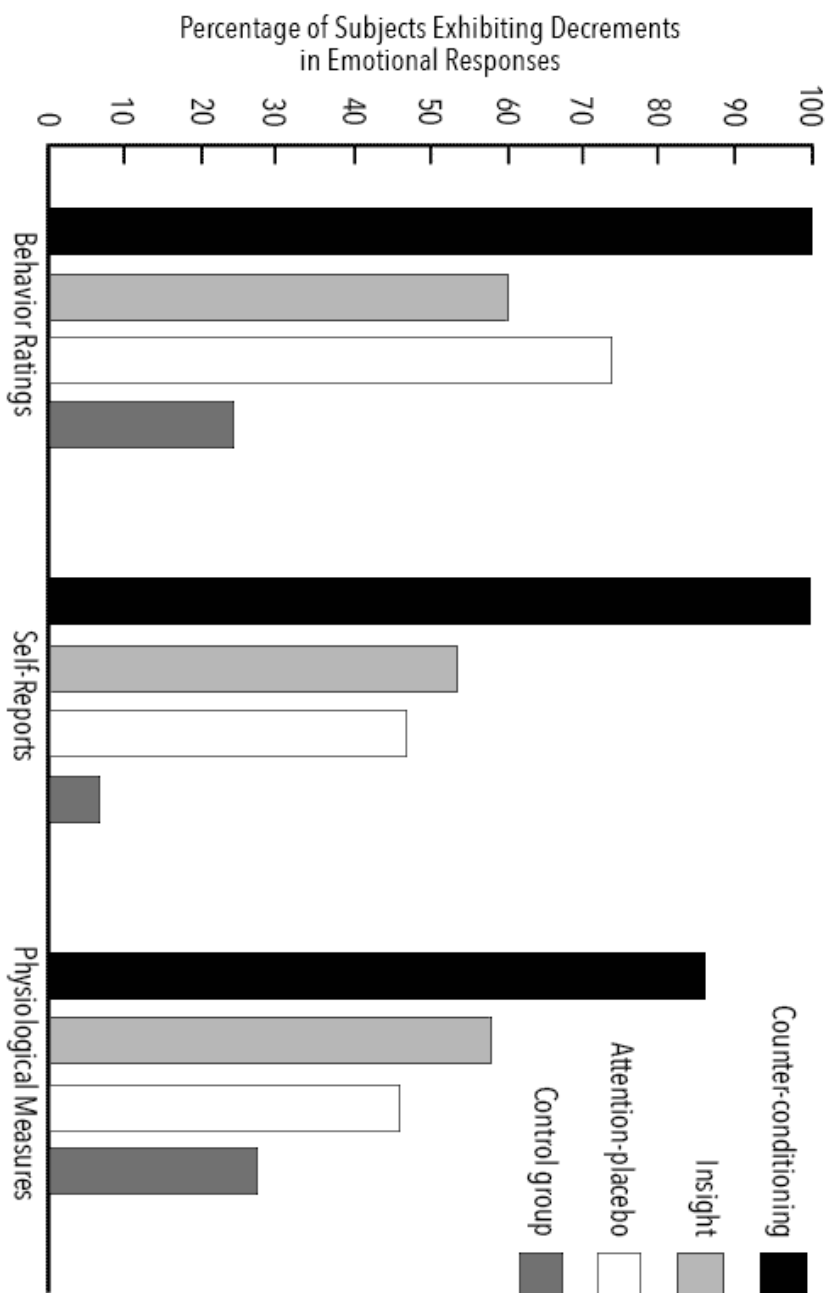


Figure 7-5. Percent of subjects in each of the four conditions who displayed decreases in anxiety as measured by behavior ratings, self-reports of emotional disturbance, and measures of physiological arousal. Drawn from data of Paul, 1966.



significantly less overt behavior indicative of anxiety, and reported less distress in the situational test as compared to the no-treatment control group. However, only the subjects receiving the counterconditioning treatment achieved a significant reduction in physiological arousal relative to the controls. Additionally, the counterconditioning group proved consistently superior on all measures to subjects in the insight and the attention-placebo conditions, which did not differ significantly from each other. Follow-up data similarly disclosed that the students treated by means of counterconditioning reported experiencing less anxiety related to giving speeches than did students in either the other treatment or the control groups.

It is also of interest that the therapists, who in their regular clinical practice favored insight-oriented methods, not only rated subjects treated

by the desensitization procedure as having improved to a greater degree, but indicated a significantly better prognosis for them as well. Their prognostications were borne out by an additional follow-up assessment (Paul, 1967), in which all subjects were readministered the personality tests approximately two years after the formal experiment was completed. Desensitization yielded the highest percentage of subjects (85 percent) who showed decrements (from pre-therapy ratings) in speech anxiety two years later, followed by insight (50 percent), placebo (50 percent), and non-treated controls (22 percent). The corresponding percentages of improvement on generalization measures of interpersonal anxiety were 36, 25, 25, and 18 percent for the four groups, respectively. Not only did desensitized cases maintain their gains over time, but none showed increases in performance

anxiety or any evidence of substitute forms of deviant behavior. These follow-up results, although most impressive, should be accepted with caution considering that they are based entirely upon self-report measures.

The foregoing project was later extended (Paul & Shannon, 1966) by administering a group desensitization treatment to students, selected from a waiting list, who, as controls of the earlier study, had shown no reduction in anxiety during the waiting interval. Students in this condition participated in nine sessions during which their emotional responses were neutralized to a common hierarchy of public speaking situations. An additional control group, matched for sex, age, class, and equated on personality test scores, was also included. In order to determine whether elimination of speech fright improves academic functioning, students' grade point averages for the

semester prior to, and following, treatment were obtained.

Group desensitization produced significant reductions in self-reported anxiety with respect to speaking and other interpersonal situations, and increases in extroversion. Additional comparisons involving these same measures show group desensitization to be equally effective as individual desensitization, but superior to the insight and placebo treatments. Moreover, students treated with group desensitization showed a modest gain, whereas nontreated controls suffered a substantial loss, in grade point average. The latter finding is somewhat surprising because one would not expect most academic grades to be determined to any appreciable degree by amount of public participation. The extensive generalization of favorable changes revealed also in the personality tests— assuming that they are

manifested in actual social behavior as well—may occur because verbal communication figures prominently in virtually all social and intellectual activities. The noted improvements were successfully maintained as revealed by a two-year follow-up study (Paul, 1968a). Group differences in academic performance provide even more impressive testimony for the lasting benefits accompanying desensitization treatment. Two years after the project was completed, 90 percent of the students who received group desensitization had either graduated or were completing their studies in good standing, whereas 60 percent of the nontreated controls had dropped out of school. The grade point averages for students in the group desensitization and control conditions in the follow-up semester were 3.5 and 2.4, respectively.

The beneficial effects of desensitization on

academic performance are further corroborated by Mann & Rosenthal (1969) with elementary school children. Compared to nontreated controls, children who suffered from examination anxiety showed significant changes in test anxiety and reading achievement scores after receiving either individual or group desensitization. Interestingly, participant observers benefited to the same degree as did direct recipients of the treatment procedures.

Another comparative test of the efficacy of counterconditioning methods for modifying diverse forms of phobic disorders is provided by Lazarus (1961), who employed an experimental design in which the behavioral outcomes of group desensitization were compared with those of conventional group psychotherapy. The experiment included acrophobics, claustrophobics, cases of impotence, and clients

who each exhibited a different type of phobic reaction. The participants were matched in pairs on the basis of age, sex, and severity of the phobic behavior, and were randomly assigned to desensitization and interpretive treatment conditions. In addition, a third group of phobic clients, who received interpretive treatment plus relaxation at the conclusion of each session, was subsequently added in order to assess the possible effects of relaxation per se on avoidance behavior. The same person served as the therapist for all three treatment conditions.

Only clients who exhibited severe phobic behavior, as measured by actual behavioral tests, were selected for the experiment. In order to minimize the possible influence of preliminary relationship experiences, the relevant anxiety hierarchies were constructed from clients' written responses to questionnaire items, rather than

from personal interviews. The clients who participated in the group desensitization were treated in small, separate, homogeneous groups. For the acrophobic clients, a common stimulus hierarchy was constructed utilizing primarily a physical proximity dimension beginning with a scene in which a subject is looking down from a height of about 10 feet, and terminating with highly anxiety-provoking items. The claustrophobic anxiety hierarchy represented a stimulus continuum in which the degree of spatial constriction and ventilation were varied simultaneously from scenes depicting the client "sitting in a large and airy room with all the windows open" to "sitting in front of an open fire in a small room with the doors and windows shut." Finally, the stimulus hierarchy items constructed for the impotent men described progressively intimate sexual situations ranging from sitting



close to a woman to pre-coital love-making in the nude.

During desensitization sessions, a deep level of relaxation was induced, following which the participants were all asked to visualize the scene which had been presented to them, and to signal the psychotherapist whenever any stimulus item proved disturbing. The rate and duration of presenting the hierarchical items were paced according to the most anxious group-member. Clients who participated in the interpretive treatment condition received a traditional form of group psychotherapy which highlighted personal exploration of feelings and interpersonal relationships, permissiveness toward and acceptance of emotional expressions, and the development of insight into the origins and the factors underlying their phobic disorders. These clients received a mean of 22 sessions, the same

number as their matched counterparts in the desensitization groups.

The therapeutic outcomes for acrophobics and claustrophobics were objectively assessed by situational tests administered one month following the termination of the treatment sessions. The acrophobics were required to climb a fire escape to a height of approximately 50 feet, then to accompany the experimenter in an elevator to the roof of the building eight stories above the street, from where for two minutes they were to count the automobiles passing below. A similarly rigorous objective criterion was adopted as evidence that claustrophobic reactions were successfully extinguished: The subjects were required to remain in the cubicle with the movable screen a few inches away without experiencing any disturbance for a period of five minutes. A second observer was present during the

situational tests to provide a reliability check on whether the client had successfully met the tolerance criteria. For obvious reasons, the impotent men were not subjected to a situational test, nor was the behavior of the four clients in the mixed group objectively measured. The improvement rates in these cases were based on reports of significant behavioral change. Although capacity performance tests are less subject to extraneous influences than self-report measures, results of this study would have been more definitive had the assessments been conducted by a tester who had no knowledge of the conditions to which the subjects were assigned rather than by the therapist himself.

Phobic behavior was completely extinguished in 13 of the 18 clients who received desensitization treatment, whereas the interpretive and interpretive-plus-relaxation

treatment successfully modified the phobic responses in only 2 out of 17 cases. Additional evidence for the effectiveness of counterconditioning is provided by the finding that 10 of the 15 clients whose phobias were essentially unmodified by the interpretive procedures were successfully treated by group desensitization within ten sessions. A follow-up study conducted at varying intervals after the termination of the treatment program revealed that 80 percent of cases who were successfully treated by means of counterconditioning procedures maintained their behavioral changes, according to a stringent criterion in which even the recurrence of weak phobic responses was rated as a relapse. Gelder & Marks (1968) similarly found that a group of phobic clients who had not responded to 18 months of group psychotherapy showed significant reductions in

phobic behavior after a few months of desensitization treatment.

Although most of the laboratory studies discussed in earlier sections were primarily designed to isolate the contribution of component variables in the desensitization procedure, their results nevertheless have some bearing on the efficacy of this approach. In evaluating outcomes a distinction should be drawn between behavioral improvement and complete elimination of avoidance behavior. The findings generally disclose that a relatively brief program of desensitization involving five to ten sessions produces improved performances in virtually all participants. In the study by Bandura, Blanchard, & Ritter (1969), for example, 90 percent of the subjects who received desensitization treatment displayed increases in approach behavior that exceeded the performances of their matched

nontreated controls. However, depending on the stringency of the criterion test, only between 30 and 50 percent of the subjects achieve complete extinction as evidenced by their ability to perform the terminal approach tasks in behavioral tests (Bandura, Blanchard, & Ritter, 1968; Davison, 1968; Lang, Lazovik, & Reynolds, 1965; Schubot, 1966). It should be noted, of course, that these improvement rates are based on very brief, time-limited therapies in which all subjects are tested after several treatment sessions regardless of the number of hierarchical items to which they have been desensitized. The actual therapeutic limits of this particular form of counterconditioning can be best established by studies in which behavioral improvement and complete extinction rates are objectively measured after subjects have been thoroughly desensitized to the entire set of anxiety-arousing stimuli. In evaluating the efficacy

of treatment procedures the incidence of terminal performances should be of major concern to discourage the development of complacency about methods that consistently achieve performance gains but leave many of the participants behaviorally incapacitated to some degree.

There are a number of clinical reports that present outcome data in the form of therapists' judgments of their success rates. Wolpe (1958) and Lazarus (1960, 1963b) state that between 75 and 90 percent of the clients whom they have treated were "markedly improved or completely recovered." Hain, Butcher, & Stevenson (1966) report that desensitization was effective in 78 percent of the cases and that improvements often occurred in areas of occupational, sexual, and social functioning beyond the specifically treated phobias. Follow-up studies, conducted at intervals ranging from six months to several years after the

termination of treatment, with few exceptions disclose that clients not only maintain their gains, but many display additional positive changes in behavior. In another paper Wolpe (1964) reaffirms the efficacy of desensitization therapy for modifying complex behavior disorders.

Somewhat less favorable outcomes than those given above have been published by Cooper (1963) and Marks & Gelder (1965) in retrospective comparisons of clients treated by “behavior therapy” and “psychotherapy” made in terms of general judgments of improvement rates from case notes. In a spirited rejoinder Wolpe & Lazarus (1966) discount the discrepant results as due to “the fledgling efforts of novices who have learned the rudiments of systematic desensitization [p. 159].” Conflicting data of this sort are not at all surprising as long as they are not erroneously considered as measures of behavior



outcome but are understood instead as differences between therapists' judgmental responses (which rarely correlate perfectly with clients' actual behavior functioning). Indeed, one would expect diminishing correspondence between actual behavior and subjective ratings as one moves from objective measures of clients' behavior to their own self-assessments, from clients' verbal reports of performance changes to therapists' judgments of improvement, from therapists' inferences based on clients' self-reports to information that happens to get recorded in case notes, and from case notes of undetermined reliability to retrospective global ratings made by still another set of judges who never had any contact with the client. Major differences in the types of case notes kept by therapists of behavioral and psychodynamic persuasions further preclude any meaningful comparison between success rates.

Much progress can be made in reducing fruitless controversies about the relative superiority of rival methods by abandoning the outcome numbers game in which therapists' judgments of their clients' verbal reports of their behavioral changes are evaluated against a legendary baseline figure of two-thirds improvement.

These types of quasi-outcome data have, at best, only suggestive value. Apart from the subjective and general nature of clinical ratings, the therapeutic interventions are exceedingly varied, including assertion training, graded reexposure to feared situations, anxiety-relief procedures, aversive counterconditioning, role playing, symbolic desensitization, verbal prompting of desired response patterns, social reinforcement of behavioral changes, and a host of unrecognized treatment factors as well as a variety of unmeasured environmental influences. It is

consequently impossible to identify which treatment variables are responsible for observed changes, even if the outcome figures were valid and the behavioral modifications were attributable to the therapeutic interventions. Of much greater concern, however, is the fact that subjective evaluations of treatment outcomes lend themselves readily to unwarranted claims of efficacy by their proponents and to premature rejection of potentially promising approaches by their theoretical rivals.

Proof of the efficacy of procedures of treatment must rest on objective assessment of behavioral changes and evidence of lawful covariation between specific learning variables and designated outcomes, rather than on general judgments of improvement in “neurotic illness,” achieved through the use of varied combinations of treatment procedures. Laboratory experiments

and controlled individual studies involving well-defined manipulations of treatment variables and objective measurements of behavioral changes will eventually yield reliable information regarding the critical parameters in counterconditioning methods. Research of this kind should not only greatly increase understanding of conditioning processes, but it also provides the basis for refinements in treatment procedures. The laboratory studies reviewed earlier represent an encouraging advance in this direction.

Innumerable single case reports are of interest not because they validate anything but because they illustrate how counterconditioning principles can be applied to exceedingly diverse anxiety disorders. Most of these studies include detailed reports, often independently verified, of the modifications achieved in clients' behavioral

functioning. However, in treatments involving the combined use of different procedures, desensitization is obviously not the sole determinant of observed changes. It is also important to bear in mind that case reports may convey an overly favorable impression of the efficacy of a given treatment method because of selective publication of successful cases.

#### *APPLICABILITY OF DESENSITIZATION TREATMENTS*

Desensitization procedures have been utilized to extinguish countless circumscribed, but partially incapacitating, phobias including avoidance of places and activities that might result in contact with feared animals, birds, reptiles, and insects (Clark, 1963; Cooke, 1966; Friedman, 1966; Ramsay, Barends, Brenker, & Kruseman, 1966); fearful avoidance of automobiles, airplanes, and other types of transports (Kraft & Al-Issa,

1965a; Lazarus, 1960; Rosenthal, 1967; Wolpe, 1962); fear of water (Bentler, 1962); storms (Costello, 1963); aversion to heat that prevented the person from washing in warm water and from drinking or eating hot foods (Kraft & Al-Issa, 1965b); and dread of atomic disasters that resulted in avoidance of radios, television, movies, newspapers, conversations, and other forms of communication that might bring news of international disharmony (Ashem, 1963); school phobias (Chapel, 1967); anxiety reactions to hypodermic injections and the use of sanitary pads (Rachman, 1959), and to hospitals and ambulances (Lazarus & Rachman, 1957); hyperesthesia of taste and touch (Beyme, 1964); autonomic disorders (Cohen & Reed, 1968); and persistent apprehensions about illness, physical injury, and death (Rifkin, 1968; Wolpe, 1961).

In addition to isolated phobias, desensitization

methods have been applied to the modification of pervasive behavioral dysfunctions resulting from incapacitating obsessions and compulsions (Haslam, 1965; Walton & Mather, 1963b), from claustrophobias and agoraphobias, from articulatory disorders (Gray, England, & Mohoney, 1965; Lazarus & Rachman, 1957; Rosenthal, 1968; Walton & Mather, 1963a), from recurrent nightmares (Geer & Silverman, 1967) and insomnia (Geer & Katkin, 1966), and from chronic alcoholism (Kraft & Al-Issa, 1967a). Finally, complex interpersonal problems have been eliminated by extinguishing clients' anxieties associated with sexual intimacy, aggressive and hostile behavior, close social relationships, social disapproval and rejection, failure to meet external or self-imposed achievement demands, and fear of persons in positions of authority (Hain, Butcher, & Stevenson, 1966; Kraft & Al-Issa, 1967b; Madsen &

Ullmann, 1967; Wolpe, 1958; Wolpe & Lazarus, 1966).

It is commonly assumed, especially in psychiatric theorizing, that grossly deviant behavior is primarily a function of biochemical determinants, whereas deviations of lesser magnitude are governed by experiential factors. Granted that physiological variables can contribute significantly to behavioral variability, such evidence does not justify a dichotomous theory of psychopathology, particularly in view of the absence of any objective criteria as to where the line of demarcation should be drawn between so-called “neurotic” and “psychotic” response patterns. In keeping with the dichotomous thesis, Wolpe (1958) questions whether schizophrenics can profit from desensitization therapy. This position implies, among other things, that persons who are considered to be psychotic are incapable



of classical conditioning. Contrary to this view, laboratory studies provide evidence that schizophrenics not only exhibit emotional conditionability (O'Connor & Rawnsley, 1959; Vinogradov, 1962), but apparently they differ little, if at all, in this respect from groups judged to be normal (Howe, 1958; Spence & Taylor, 1953). Favorable outcomes have been achieved in the few instances where counterconditioning procedures were applied to emotional behavior exhibited by individuals diagnosed as schizophrenic (Cowden & Ford, 1962; Zeisset, 1968).

The ease with which symbolic desensitization is achieved will depend in part on secondary factors such as clients' attentiveness, cooperativeness in visualizing verbally presented scenes, and facility in inducing anxiety-inhibiting responses, in addition to variations in their conditionability. Cowden & Ford (1962), for

example, encountered considerable difficulty in persuading their clients to carry out relaxation exercises. It is possible, therefore, that grossly deviant personalities who present severe cognitive deficits, inadequate attending behavior, and irrelevant associations to verbal stimuli, would prove less responsive to exclusively symbolic forms of counterconditioning therapy. Instances in which these types of limiting factors are operative may require, at least in early stages of treatment, greater reliance upon graduated reexposure to actual threats along with stress-reducing stimuli that can be externally controlled.

The mere presence of anxiety and avoidance behavior does not necessarily mean that conditioned emotionality is the central problem. A person who lacks requisite behaviors for coping effectively with the social, intellectual, and vocational demands of his environment will be

repeatedly subjected to punishing experiences. Under these circumstances, feared situations are, in fact, aversive and hence the emotional arousal is not unrealistic. In cases of this type behavioral deficits constitute the major problem, whereas the emotional component is a secondary consequent. A treatment devoted solely to extinguishing emotional responses would be at best a temporarily effective means of producing a relaxed incompetent. On the other hand, a treatment that established behavioral competencies would substantially decrease the punitiveness of the client's social environment and thus achieve stable reductions in fearfulness.

A response induction program may be necessary even when anxiety disorders do not originate in behavioral deficits. Persons who suffer from unrealistic or disproportionate fears tend to avoid engaging in fear-provoking activities. This

often results in a spiraling process where fear and avoidance prevent further elaboration of interpersonal skills, and marginal competencies, in turn, render threatening situations even more anxiety-arousing. In most cases, therefore, a combined treatment aimed at extinguishing unwarranted fears and at instilling capabilities would yield best results.

Since removal of unwarranted avoidance behavior enables people to participate in potentially rewarding activities, approach responses, once they have been restored, are likely to be effectively maintained by their favorable consequences. However, the initial behavioral changes are sometimes impeded by the existing advantages derived from disabling phobias. As a result of their phobic conditions, people may gain exemptions from certain responsibilities, they may reduce unpleasant vocational and familial

demands, and they may achieve considerable control over the behavior of others. Where such hindering contingencies exist, unless the rewards that contribute to the maintenance of avoidance behavior are withdrawn, desensitization alone is unlikely to bring about much behavioral improvement.

### **Identification of the Stimulus Determinants of Emotional Behavior**

Procedures that effect behavioral changes primarily through response consequences ordinarily do not present any major diagnostic problems. An agent of change who has at his disposal an effective means for evoking the desired behavior and sufficiently powerful incentives can, given adequate control over the environment, achieve substantial behavioral modifications by overriding undetermined maintaining conditions. In contrast, stimulus-

oriented treatments, especially in their present stage of development, require considerable diagnostic ingenuity. In order to achieve any measure of success with classical extinction procedures the primary stimulus determinants of emotional behavior must be accurately identified and neutralized. In current practice the selection of anxiety sources is based upon informally collected data, from interviews, case histories, and various personality tests, most of which were originally constructed for entirely different purposes. Although no reliability studies have been conducted in which different therapists select from the same protocols what they consider to be the critical sources of anxiety, it would come as no surprise to find low consensus, particularly in cases involving multiform problems.

If the efficacy of counterconditioning methods is to be maximized, the present informal

assessment approaches must be replaced by more efficient and reliable procedures. In many cases, of course, the eliciting stimuli are readily identifiable. In others, however, the occurrence of emotional responses is dependent upon stimuli that lack distinctiveness, or upon particular patterns and sequences of events which are difficult to discern. However, individuals are rarely continuously anxious; rather, they tend to display such reactions only at certain times and under particular circumstances. Covariations between stimulus events and emotional responding can, therefore, be best identified through careful analysis of regular variations in the onset and magnitude of emotional behavior. After the pattern in anxiety responses has been determined, one can isolate common features in situations in which the behavior typically occurs. The major controlling stimuli cannot always be identified

solely through systematic examination of the objective characteristics of environmental events which may, in fact, be highly dissimilar. Rather, the common determinants are often revealed in detailed accounts of the thoughts and subjective reactions that clients experienced in anxiety-producing situations.

New assessment approaches are particularly needed for isolating stimulus determinants when only gross covariant relationships are noted. Information of this kind can be obtained by systematic behavioral measurement of emotional reactions, both in the presence and in the absence of specific contextual and social cues which appear to be regularly correlated with variations in the observed anxiety responses. Because of the countless and complex varieties of learning histories represented by clinic populations, a highly flexible stimulus exploration procedure is



required. When utilization of physical events is too cumbersome and impractical, suspected fear-provoking situations can be easily presented in verbal or pictorial forms. Emotional responses to these potential threats might be measured behaviorally, physiologically, through verbal reports, or a combination of these methods.

Before turning to other issues of stimulus specification, it is necessary to clarify several common misconceptions about the range of applicability of counterconditioning procedures. In most polemical discussions of psychotherapy, behavioral and psychodynamic approaches are usually presented as rival methods of treatment suitable for different types of anxiety conditions. Advocates of psychodynamic methods typically assume that desensitization is essentially limited to simple “monosymptomatic” disorders under the control of clear-cut stimuli, whereas

psychodynamic procedures are suitable to more complex and pervasive anxiety problems. Behaviorally oriented therapists, on the other hand, contend that desensitization procedures are applicable to any dysfunction involving anxiety, and view psychodynamic approaches as having proved ineffective in modifying either simple or complex conditions.

Greatest progress would be achieved in developing efficacious treatment approaches if these ill-defined partisan labels were retired from further use. Much time has been spent fruitlessly in attempts to define what constitutes “behavior therapy” and “psychotherapy.” A more productive and less confusing approach to the understanding of social influence processes is to focus on the basic mechanisms through which behavioral changes are produced. These mechanisms are undoubtedly brought into play to varying degrees

by conditions created either deliberately or unwittingly by change agents in influence attempts arbitrarily designated behavior therapy, psychotherapy, counseling, reeducation, or some other appellation. In each of the foregoing enterprises change agents model certain attitudes and response patterns. One might, therefore, analyze these various activities in terms of the behavior the change agents are modeling, its functional value for the recipients, and the extent to which conditions that facilitate modeling are present. Similarly, one might examine reinforcement influences, which are operative in all social situations, to determine what behavior is being reinforced, with what frequency, and by what means in different systems designed to modify psychological functioning.

Because of the ambiguities and erroneous impressions associated with the terms “behavior

therapy” and “psychotherapy,” their continued use beclouds most of the fundamental issues in this field. For example, the rate at which a given behavior can be extinguished depends upon the nature of its maintaining conditions rather than upon whether it is “monosymptomatic” or part of a multiform problem. In fact, many so-called simple disorders, such as tics, that are immediately self-reinforcing because their occurrence is tension-reducing, are unusually resistant to change. Therefore, some apparently simple behaviors fail to respond well to treatment, whereas many complex disorders are readily modifiable (Lazarus, 1963a; Meyer & Crisp, 1966). Moreover, whether emotional responses are limited or diffuse is often determined by the pervasiveness of emotion-arousing cues rather than by conditions existing within the individual. Those for whom snakes are threatening will

exhibit a highly circumscribed phobic disorder because reptiles are rarely or never encountered in urban settings. By contrast, when anxiety has been conditioned to stimuli that appear in a variety of frequently encountered situations, persons will experience pervasive or “free-floating” anxiety (Wolpe, 1958). Similarly, if our unperturbed snake-phobics were to become residents in a reptile-infested locale, they too would exhibit diffuse and disabling anxiety disorders.

Discussions of desensitization often create the impression that this procedure is principally applicable to stimulus events that are easily specifiable and nonsocial in character; whereas anxieties arising from aggression, dependency, sex, and other interpersonal sources are made to seem the exclusive domain of psychodynamic approaches. In actuality, desensitization methods

are not restricted, either on theoretical or practical grounds, to any particular set of emotion-arousing stimuli. Indeed, a counterconditioning form of treatment could be employed to neutralize the negative valence of Oedipal fantasies in clients for whom this might constitute a problem.

It would perhaps be more accurate to say that the applicability of desensitization treatment is mainly limited by therapists' ingenuity in identifying sources of anxiety, particularly when the crucial stimulus determinates are obscure. This task is complicated by the absence of any objective criteria for determining the appropriate events for treatment. Let us consider, for example, a female agoraphobic who is unable to venture outside the household. Should one desensitize her to progressively farther anxiety-arousing excursions from the home? One might argue that her phobic behavior arises from a morbid fear of

sexual encounters, apprehensions about abandonment and helpless exposure to crowds, or some other sources, and it is these contents that must be emphasized in the treatment. To take another example, should a snake-phobic be desensitized to progressively closer interactions with reptiles or to genital concerns on the assumption that “the sight of snakes provokes penis emotions [Fenichel, 1945, p. 48]”? Laboratory studies of desensitization furnish some evidence that claustrophobia can be successfully eliminated by neutralizing individuals’ emotions to cues of increasing space constriction (Lazarus, 1961) without focusing on their fears of being “left alone with dangerous impulses and fantasies [Cameron, 1963, p. 286]”; acrophobics have lost their fear of heights through utilizing elevation hierarchies (Lazarus, 1961) rather than fears of “falling in self-esteem” or “self-destructive

impulses [Cameron, 1963, p. 280]"; and countless snake-phobics have been cured by being desensitized to reptile rather than phallic stimuli. In view of these interesting findings, it would be most instructive to compare the degree to which phobic behavior is extinguished when desensitization is directed toward either the phobic stimuli themselves or the hypothesized internal threats. A desensitization procedure combined with objective measurement of changes in avoidance behavior provides an excellent means of testing different theories regarding the stimulus determinants of emotional response patterns.

As illustrated in the preceding examples, psychodynamic formulations assume that anxieties are internally generated by arousal of unconscious impulses which are then displaced and projected onto environmental objects.



External phobic cues are therefore regarded as pseudoevocative stimuli. Contrary to this interpretation, successful neutralization of emotional responses to phobic stimuli not only produces stable decreases in avoidance behavior without the emergence of new deviant responses, but it is often accompanied by reductions in anxiety in other areas of functioning (Bandura, Blanchard, & Ritter, 1969; Lang, Lazovik, & Reynolds, 1965; Paul, 1967). The latter findings make the view that avoidance behavior is controlled by displaced and projected stimulus valences appear of questionable validity, or alternatively, suggest that neutralization of external projective stimuli is one of the most powerful means currently available for extinguishing the arousal properties of unconscious internal events.

The above discussion is not meant to imply

that stimulus determinants are always inferable from the content of deviant responses. In many cases emotional behavior is under multiple stimulus control in which some of the evocative cues, because of peculiar conditioning histories, may be thematically remote. Also, complex social behaviors characteristically depend upon interrelated activities, each governed by somewhat different stimuli. A given performance may consequently be inhibited or disrupted by anxiety arising from thematically different component functions that are not readily evident. The operation of these more intricate stimulus determinants is best illustrated by applications of desensitization procedures to the modification of diverse sexual disorders.

According to Bond & Hutchison (1960) the most frequent classes of exposure-eliciting stimuli for sexual exhibitionists are stress experiences

provoking inadequacy and females who possess certain physical characteristics that have been endowed by the exhibitionist with unusually high sexual valence. The authors therefore employed both sexual and devaluation hierarchies in treating a 25-year-old male who presented a long history of persistent genital exposure leading to 24 charges of indecent exposure including eleven prison convictions. The client had undergone a variety of treatments without benefit, including individual and group therapy, carbon dioxide abreaction therapy, moralistic exhortations under hypnosis; finally, in desperation, he resorted to a specially designed chastity belt that his wife locked in the morning and unlocked at night. Even these physical restraints failed to control the client's behavior as he was once again arrested for indecent assault as he attempted to grasp the legs and breasts of a young woman while wearing his

chastity belt.

Three hierarchies of exposure-provoking stimuli were constructed for the desensitization treatment. One set of stimuli was graded on the basis of the age and physical appearance of the females, ranging from older women who minimally provoked exposure to young attractive females. These stimuli were presented in each of four settings in which genital exposure frequently occurred (i.e., in department stores, on beaches, on sidewalks, and in automobiles). In addition, a separate hierarchy was constructed on the basis of washroom situations, since they served as the most potent contextual stimuli for exhibitionism. The third stimulus dimension contained social situations giving rise to feelings of inadequacy. These sets of eliciting stimuli were then progressively paired with hypnotically induced relaxation over a period of 30 sessions. The client

was also instructed to practice relaxation and to initiate this chain of responses by the word “relax.”

As treatment progressed the client became less emotionally aroused by provocative females, his exhibitionistic urges and sexual fantasies diminished in frequency and intensity, and he displayed increasing voluntary control over his exposure behavior on occasions when he experienced some degree of emotional arousal. As the client made continued improvement, he was able to participate in group activities involving close heterosexual contacts without experiencing any tension or urges to expose himself. He showed no exhibitionistic behavior for a period of 13 months following the termination of therapy (Bond & Hutchison, 1964). Subsequently, the client exposed himself on a few occasions to women in washrooms in response to severe financial and vocational stresses, but provocative

females in public places such as parks, streets, and department stores no longer elicited sexual exhibitionism.

It is of interest that in the above case deviant sexual behavior was partly controlled by nonsexual stress events. Wolpe (1958) similarly reports the successful treatment of a pharmacist who suffered from impotence by desensitizing him to essentially nonsexual cues. This client, who had experienced satisfactory sexual relationships with several different girls, suddenly became impotent when he attempted intercourse with a virgin girlfriend who yielded reluctantly to his insistent pressures. During this unsuccessful seduction the client found himself thinking about a disturbing childhood event in which he overheard his parents having intercourse; the mother's protestations and weeping had apparently succeeded in conditioning aggressive and brutal meanings to the sexual act.

This conditioning was undoubtedly facilitated by the marked hypersensitivity to aggressive and physical injury cues that the boy exhibited long before witnessing the parental sexual episode. By the time the client had entered psychotherapy he was sexually incapacitated, not only by generalization from the parental situation to the virginal girlfriend, but also by a secondary generalization from her to a subsequent girlfriend who bore a physical resemblance to her. On the basis of a learning analysis of the impotence, the anticipated pain and physical injury cues occurring during defloration were considered to be the critical events producing the sexual inhibitions. The client was therefore desensitized to several stimulus dimensions involving physical injury, vocalization of pain and suffering, and violent verbal interchanges resembling the parents' endless arguments. Complete sexual

responsiveness was restored after aggressive and pain cues lost their capacity to evoke anxiety.

Further suggestive evidence that in some cases inhibition of heterosexual behavior may be maintained primarily by anxiety attached to social and physical contact cues rather than to sexual stimuli per se is provided by Stevenson & Wolpe (1960) in the treatment of a pedophile and two homosexuals. All three clients displayed markedly passive, submissive, and withdrawn behavior that apparently stemmed from authoritarian control by tyrannical parents. As a consequence of this aversive social training a broad class of interpersonal responses was inhibited except toward little girls in one case, and toward nurturant nonthreatening male companions in the other two. The treatment strategy in all three cases consisted essentially of training in socially assertive behavior. The fact that these clients



readily adopted exclusively heterosexual patterns of behavior and experienced them as positively reinforcing after assertive responses had been developed suggests that the deviant sexuality was a function of generalized interpersonal anxieties, rather than of specific sexual origin.

The covariant relationship between assertiveness and sexuality noted in the preceding cases is convincingly demonstrated by Kahn (1961) in a laboratory experiment with infrahuman subjects. Two groups of mice were trained in either socially aggressive or submissive behavior. Both groups were then tested for sexual responsiveness toward virgin females known to be in estrus. The social training in aggression and submission had a striking differential effect on the mating responses of the males. Whereas the aggressively trained animals immediately pursued the females, copulated with them, and remained

sexually active throughout the test session, not a single submissive animal did so. On the infrequent occasions when the submissives approached their female companions, they did so very hesitantly and then quickly reverted to the avoidant response pattern.

The findings of the latter experiment may be interpreted in several ways. To the extent that aggression is an important component of sexual behavior (Ford & Beach, 1951), then any increase or inhibition of aggressive responses would be associated with a corresponding enhancement or inhibition of sexuality. Since, however, the animals failed to initiate any sexual responses, including preparatory ones, any anxiety-evoking stimuli accompanying either aggressive or sexual behavior could not have been generated in the test situation. Therefore, a second and perhaps more likely explanation of these findings is that the

previously acquired physical contact anxieties motivated and reinforced generalized avoidance responses that precluded the occurrence of any sexual behavior, even if such responses were only weakly inhibited.

The discussion thus far has illustrated how anxiety arising from nonsexual sources can control the inhibition of appropriate heterosexual behavior. Actually, it is possible to delineate several different stimulus determinants of sexual deviance, each requiring a somewhat different treatment strategy. First, there is the behavioral syndrome, to which reference has already been made, wherein social and physical contact arouse anxiety reactions, but sexual stimuli per se may be positively valenced. In these cases, a program of treatment utilizing modeling and reinforcement procedures designed to foster and disinhibit interpersonal approach tendencies is likely to

result in a corresponding enhancement of heterosexual behavior.

A second frequently encountered pattern is one in which a person has little or no apprehension about close social interactions, but sexual cues, particularly those associated with coital performance, are negatively valenced. Impotence, frigidity and other specific sexual inhibitions are common complaints associated with the latter syndrome. For problems of this sort, the neutralization of sex-related stimuli, through some form of desensitization procedure, would be the method of choice. An example is provided by Lazarus & Rachman (1957), who successfully treated a case of impotence of recent origin by eliminating anxiety to pre-coital scenes. In instances where the sexual inhibitions are less strongly established, impotence can be effectively modified by having the client follow a self-

administered program of desensitization in actual sexual situations (Wolpe, 1958). The latter procedure is described more fully in a later section of this chapter.

Individuals who are more severely incapacitated because they respond with strong anxiety to close interpersonal contact as well as specific cues would benefit most from a treatment program combining both desensitization of interpersonal and sexual cues and training in interpersonal competencies.

Finally, it should be realized that deviant sexual behavior is sometimes maintained by substantial positive reinforcement, whereas anxiety mechanisms, which may have figured prominently in the genesis of the disorder, currently play a minor role. Many homosexual patterns of behavior are, in fact, sustained by the

positive rewards deriving from homosexual alliances (Henry, 1941; Hooker, 1961). If the person should desire to change his sexual orientation, differential reinforcement procedures designed to reduce the strong positive valence of homoerotic stimuli and to enhance responsiveness to heterosexual cues would constitute the appropriate therapeutic strategy in such cases. These methods are discussed in some detail in the next chapter.

The necessity for identifying the controlling stimuli and determining the functional value of behavioral dysfunctions before selecting the method of treatment is well illustrated in a clinical study reported by Lazarus (1963b). Sixteen women with chronic frigidity were administered the standard desensitization procedure on the assumption that frigidity represents conditioned avoidance maintained by sexually generated

anxiety. The desensitization was conducted along stimulus dimensions of increasing intimacy and other sexually inhibiting stimuli that were unique to each case. Significant improvements in sexual relationships, as reported by the women and corroborated by their husbands, were achieved in 9 of the 16 women for whom frigidity appeared to be determined by sexual anxieties. The majority of the others, most of whom displayed intense and generalized hostile attitudes toward men, terminated therapy after several interviews. This subgroup of women evidently required a treatment program aimed at reducing hostile behavior. Where hostility toward men results from a sense of inadequacy and submission, a program of assertion training would not only reduce exploitation, which a submissive person is likely to incur, but at the same time increase feelings of self-esteem and self-worth. In addition

to establishing new response orientations toward men through modeling and positive reinforcement, desensitization procedures might be employed to decrease excessive hostility to inevitable evocative situations. To achieve greatest gains it may also be necessary to reduce hostility-generating behavior on the part of the husband.

*ANXIETY RESPONSE DECREMENTS AS A FUNCTION  
OF NEUTRALIZING PRIMARY AND  
GENERALIZATION STIMULI*

The introductory chapter discussed how emotional responses elicited by a particular stimulus tend to generalize spontaneously to a wide variety of cues falling on the same physical or semantic stimulus dimension. It has also been demonstrated in numerous laboratory studies (Bass & Hull, 1934; Hoffeld, 1962; Hovland, 1937) that extinction effects also generalize to stimuli at all points on the generalization gradient. Whether



extinguishing emotional responses to the primary conditioned stimulus is more effective in neutralizing the entire range of similar cues than desensitizing the individual to generalization stimuli represents a question of considerable theoretical and practical importance.

Many theories assume that stable and widespread behavioral changes will result only if the prototypic conditioning involving the primary stimulus object is modified. Consequently, a considerable amount of time is typically devoted to diagnostic exploration and reconstruction of the client's social history before any therapeutic interventions are attempted. If it were found that neutralizing a generalization stimulus had about as much effect on the extinction gradient as would result from extinguishing emotional responses to the original conditioned stimulus, then it would make little difference at which point on the

stimulus continuum the change agent began the counterconditioning process. Unfortunately, laboratory experiments necessary to resolve this issue have not yet been conducted. A few investigations have been reported, however, in which the magnitude of emotional responses to the CS originally employed in the establishment of conditioned responses is assessed as a function of extinguishing emotional reactions to generalization stimuli located at various distances from the CS. Findings from these studies (Bass & Hull, 1934; Hoffeld, 1962; Hovland, 1937) consistently demonstrate that neutralizing any relevant stimulus, whether adjacent to, or remote from, the CS, has the effect of reducing somewhat the emotional responsiveness to cues at all points on the generalization gradient. The anxiety decrement, however, becomes progressively smaller the farther the test stimuli are removed

from the stimulus selected for extinction.

The foregoing findings suggest that positive outcomes can be achieved to some degree by deconditioning any stimulus possessing anxiety-arousing properties, but that the greatest benefits will be derived from focusing on the particular events that the change agent wishes to neutralize, regardless of whether they constitute the original or the generalized stimuli. On the basis of these findings there is no reason to expect that desensitizing the primary conditioned stimulus would have a more widespread effect on generalization cues than neutralizing the latter stimuli directly. Thus, for example, if a given individual's anxiety responses to persons in authority primarily represent generalization from earlier punishing experiences with his parents, more substantial and rapid benefits would be derived from neutralizing emotional responses to

authority figures whom he currently fears than to his parents.

### *BASIC STIMULUS DIMENSIONS*

After the stimuli to be counterconditioned have been selected, they must be scaled in terms of their emotion-eliciting potential if one employs a graduated approach. In setting up the stimulus hierarchies, the potency of aversive cues can be varied on several dimensions. When emotional responses are elicited by nonsocial events they can be ordered in terms of *physical proximity* to the feared objects. The use of a proximity dimension is illustrated in Wolpe's (1962) treatment of a woman suffering from a severe automobile phobia that originated from a collision at a crossroad. An anxiety hierarchy was constructed involving highway scenes in which cars made progressively closer advances to the

client's automobile as it approached a highway intersection.

Stimulus hierarchies have been constructed in terms of a *temporal dimension* for treating fears of public speaking (Paul, 1966), separation anxieties (Lazarus, 1960), and apprehensions about examinations (Emery & Krumboltz, 1967). A *symbolic-reality* dimension is frequently employed in setting up the anxiety stimulus continuum. A claustrophobic series may range from reading about others being confined in small enclosures to imagining oneself "trapped" in a stalled elevator for progressively longer periods of time (Wolpe, 1961); a snake-phobic series may vary from writing the word "snake" to handling plastic specimens, to holding a live nonpoisonous reptile (Lazovik & Lang, 1960).

Another effective way of grading cues is by

*varying the number of emotion-provoking elements* in the total stimulus complex. In Wolpe's treatment of the automobile phobia described above the anxiety- arousing value of traffic scenes was controlled by varying the speed of the automobiles, the trustworthiness of drivers in the approaching cars, the presence or absence of traffic signs and signals, and the characteristics of the person driving the client's car.

For many persons who seek treatment, relatively complex social stimuli or interpersonal responses themselves serve as the primary sources of anxiety. In scaling the emotion-arousing properties of social cues, the *nature and intensity of the behavior of others* can be utilized as the basis for graduating threats. Thus, for example, a person who was greatly disturbed by displays of aggression was gradually desensitized to a stimulus hierarchy which ranged from a situation

in which men engaged in a mild argument to one in which the participants physically attacked each other (Wolpe, 1958); similarly, a graded series of devaluation situations was set up for a gynecologist who was extremely sensitive about any criticism or rejection from others (Wolpe, 1962). An intensely jealous male was treated by utilizing a series of jealousy-provoking hierarchies, each of which depicted varying degrees of friendly interactions between the client's fiancée and several rival males (Wolpe, 1958).

In the illustrations presented thus far the determinants of emotional responses are primarily external social or situational cues. If a person has been repeatedly punished for displaying a particular form of behavior, the tendency to perform these social responses becomes, through their association with

punishment, a stimulus for anxiety. Thus, for example, if punishment has occurred frequently in conjunction with aggressive behavior, its expression will elicit anticipatory emotional reactions. Similarly, if sexual behavior is associated with punishment, sex responses gradually acquire anxiety-evoking properties. Both of the emotional reactions considered are response-correlated or self-generated. The stimulus hierarchies in the treatment of such classes of anxiety disorders would contain increasing *intensities of the negatively valenced social responses*, ranging from attenuated forms that are likely to elicit relatively mild anxiety to more forceful expressions capable of arousing emotional responses of high magnitude.

Although the preceding discussion has highlighted individual dimensions on which emotion-eliciting cues can be ordered, in many



cases the stimulus hierarchies are constructed by varying cues on several dimensions simultaneously. Moreover, many psychological problems are multiform in character and, consequently, a number of different stimulus hierarchies containing both environmental or response-produced cues may have to be constructed for a given individual in order to encompass the full range of his anxiety responses. The more generalized the emotional behavior, the greater the need for multiple hierarchies.

### **Neutralization of Threats in Symbolic or Realistic Forms**

For reasons of ease, economy, and flexibility, counterconditioning is typically directed toward symbolic representations of actual threats. Symbolic presentation obviates the practical inconvenience and encumbrance of graded physical presentations; it also allows the client to

terminate fear-arousing stimuli without making actual avoidance responses by simply thinking of something else. As illustrated in the preceding section, persons may be desensitized to imagery of aggressive behavior, sexual intimacy, social rejection, or any other type of emotion-provoking situation. The desensitization procedure devised by Wolpe, therefore, represents a form of *cognitive counterconditioning* where both the aversive events and the opposing positive condition are verbally induced and sustained through covert self-stimulation rather than through paired presentation of the physical stimuli themselves. Unlike direct forms of deconditioning in which, for example, a feared rabbit appears in temporal conjunction with positive consummatory responses (Jones, 1924), the subject is instructed to visualize the rabbit and to imagine himself eating a delicious culinary treat. In view of the

heavy reliance of Wolpe's method upon symbolic processes, it is surprising to find this approach described critically as being concerned only with peripheral skeletal processes (Murray, 1963; Shoben, 1963).

The utilization of symbolized aversive events is predicated on the assumption that stimuli in this form possess emotion-arousing properties analogous to their real-life counterparts. If this were not the case, the symbolic method would afford little opportunity to decrease the arousal potential of actual threats, and hence, there would be no appreciable treatment effects to transfer from imagined to real situations. Results of several studies demonstrate that thoughts do have arousal capabilities. Miller (1950) found that emotional responses conditioned to overt verbalizations generalized extensively to their cognitive equivalents so that thoughts of the negatively

valenced events generated strong GSR responsiveness, whereas thoughts of responses that had never been punished failed to elicit any emotional arousal. Barber & Hahn (1964) measured subjective discomfort and physiological responses (heart rate, frontalis muscle tension, and reduction in skin resistance) in subjects who received either a painful cold stressor or merely imagined the unpleasant experience. They found that imagined painful stimulation produced subjective distress and physiological responses similar to those induced by actual painful stimulation. In a study directly relevant to the desensitization procedure, Grossberg & Wilson (1968) found that instructions to visualize fearful scenes generated significantly more autonomic arousal than instructions to imagine neutral situations.

Individuals who are unable, for one reason or

another, to visualize threatening stimuli vividly, or for whom imagined scenes fail to evoke emotional reactions, will most likely derive little benefit from an exclusively cognitive form of counterconditioning treatment. It is not entirely clear why, in some cases, symbolic stimuli have not spontaneously acquired, through generalization, some emotion-arousing potential from their actual counterparts to which conditioned responses were originally established. This phenomenon may partly reflect the outcome of a particular form of discrimination training that markedly influences the generalization gradient. Under conditions where thoughts, feelings and verbalizations are accepted or even encouraged but corresponding overt actions are punished, emotional conditioning is apt to be confined to the actual activities. This type of differential reinforcement of verbalizations and actions is, in

fact, often recommended in popular books on child-rearing (Baruch, 1949), and widely practiced socially.

Since therapists can exercise only indirect control over client's self-stimulation, requisite treatment conditions are sometimes difficult to create and to manage in a cognitively mediated desensitization. Weinberg & Zaslove (1963), for example, report that individuals occasionally attenuated the aversiveness of situations presented for their visualization by incorporating protective elements. Lazovik & Lang (1960) similarly found that a phobic subject, who derived little benefit from desensitization, tended to modify the presented scene by simultaneously visualizing herself in a comfortable situation. Emotional responses can be successfully protected from extinction by introduction of discriminative safety cues (Solomon, Kamin, & Wynne, 1953). In

addition to stimulus-attenuating alterations, individuals sometimes generate excessively high levels of arousal by adding unintended aversive elements to a presented scene. In an effort to increase the affective value of nonarousing imagined stimuli, and to minimize stimulus modifications in undesired directions, clients who present these types of problems are often instructed to verbalize aloud what they are visualizing (Wolpe, 1958).

Aversive stimuli can be more precisely controlled, the potency of counterconditioning methods can be augmented, and problems of transfer of extinction effects to real-life situations can be largely obviated by utilizing *actual* anxiety-provoking objects or situations. These benefits accrue because emotional responsiveness is extinguished to the actual stimuli that exercise strong control over avoidance behavior under

naturalistic conditions rather than to symbolic events that may possess weaker arousal potential because of their dissimilarity to the primary instigators. In keeping with this assumption, Strahley (1966) demonstrated that phobic subjects who were required to interact with the feared object achieved greater reduction in fear and avoidance behavior than subjects who received symbolic desensitization.

A few studies have been reported in which a graded series of tangible stimuli was employed in the desensitization paradigm. Clark (1963) treated a 31-year-old woman who, for more than 25 years, had exhibited a seriously incapacitating phobia of feathers and birds. Although she was able to visualize scenes involving birds without displaying much affective arousal, she was unable to venture out of doors to situations where there was any possibility that birds might be encountered (e.g.,



parks, zoos, outdoor walks, or the seaside); she responded with marked anxiety to down pillows, cushions, and feathered hats, and suffered from persistent “anxiety dreams of people throwing feathers and birds swooping.” The treatment sessions were conducted in the following manner: After feelings of calm relaxation were hypnotically induced the therapist first presented a feather at a distance and gradually brought it closer so long as the client showed neither subjective disturbance nor GSR deflections. Repeated stimulus presentations were interspersed with suggestions of relaxation and calmness. In this manner the woman was deconditioned to a wide variety of increasingly disturbing physical stimuli that included feathers of all shapes and sizes, bags full of feathers, stuffed birds with wings folded and outstretched, and finally, caged live birds.

As the client displayed increasing tolerance of

feathers, she was encouraged to perform a corresponding graded series of tasks in real-life situations to further augment the deconditioning and generalization process. After 20 treatment sessions she was “completely undisturbed by sleeping on feather pillows, could have handfuls of feathers flung at her, could plunge her hands into a bag of down and no longer feared going outdoors or birds in the garden [p. 65].”

Freeman & Kendrick (1960) similarly employed a physical stimulus dimension in treating a woman who was terrified of cats and responded anxiously toward a wide variety of furry objects. The hierarchical items included pieces of material graded in texture and appearance which ranged from velvet to catlike fur, toy kittens, pictures of cats, a live kitten, and finally a large full-grown cat. In addition to adults who are unable to produce emotion-arousing

imagery, it is also difficult to employ symbolic desensitization with young children. Consequently, applications of these methods to young age groups typically involve carefully graded exposures to actual feared objects (Bentler, 1962; English, 1929; Jones, 1924; Lazarus, 1960).

Aversive stimuli have occasionally been presented in other tangible forms when imaginal procedures were either ineffective or inapplicable. Friedman (1966) successfully treated a deaf mute who was incapacitated due to a severe dog phobia by employing *pictorial stimuli* of dogs arranged in increasing size and ferocity. Results of a study by Leon (1967) suggest that avoidance behavior may be more durably eliminated by neutralizing aversive stimuli in pictorial than in imaginal forms. Seager & Brown (1967) extinguished a severe wind phobia by altering the fear-provoking capacity of *auditory stimuli*. In the latter case, tape

recordings of wind noises progressing from mild breezes to blustery storms were carefully adjusted in volume and turbulence to the client's emotional responses, as monitored physiologically throughout treatment.

Counterconditioning of emotional responses poses no serious problems as long as physical stimuli can be managed with ease. Even if the actual objects cannot be introduced into the treatment situation because of their size and complexity the desensitization can be conducted in naturalistic settings in which the critical stimuli regularly occur. The procedural problems become considerably more difficult, however, in cases where emotional arousal is primarily generated by complex social situations or by the person's own behavior. It would be of considerable interest in this connection to experiment with graded pictorial stimuli (Bandura & Menlove, 1968) or

tape-recorded social interaction sequences. Preliminary evidence (Bandura, Blanchard, & Ritter, 1969) indicates that these more tangible modes of stimulus presentation, particularly if combined with modeling cues, can extinguish anxiety more thoroughly than when subjective threats are cognitively reinstated. These findings suggest that it would be advantageous to devise graduated film sequences for objects and social situations which are common sources of anxiety.

#### *SELF-ADMINISTERED DESENSITIZATION IN NATURALISTIC SITUATIONS*

In the treatment strategies discussed thus far the change agent manages the presentation of both the emotion-provoking and the anxiety-competing stimuli so that responses to the latter cues prevail over the former. To the extent that a person can be trained to manage skillfully these two sets of events in his everyday experiences, he

can achieve some degree of self-directed desensitization.

Graded performance tasks have been successfully employed to some extent in conjunction with symbolic counterconditioning. Indeed, because individuals often show insufficient improvements in performance following complete symbolic desensitization, Meyer (1966) has adopted a procedure in which clients are required to perform behaviors under optimal real-life circumstances after anxiety has been thoroughly extinguished to the corresponding imagined situations. The relative superiority of this type of approach is corroborated empirically by Garfield, Darwin, Singer, & McBrearty (1967). These authors found that avoidance behavior was more extensively reduced by symbolic desensitization combined with graded performance tasks than by

desensitization alone.

A further illustration of how performance extinction can supplement even counterconditioning involving realistic stimuli is provided by Clark (1963) in the treatment of the bird phobia described earlier. After a particular aversive stimulus had been successfully neutralized (e.g., a single feather, a bag full of feathers, a stuffed bird) the client took the objects home. Similarly, when emotional reactions to stuffed birds were extinguished, visits were arranged to an aviary and a museum containing a varied array of stuffed birds. In later stages of treatment, following desensitization to a live bird, the client visited, with the reassuring support of her family, a park full of domesticated ducks and other fowl. As a precaution against possible negative reconditioning by premature exposure or the occurrence of unanticipated threats, the client

was instructed to retire from the situation or to terminate approach behavior if it should become emotionally disturbing.

Considering the transfer decrements from imagined to real-life situations, carefully selected and well-timed performance tasks should be included as an integral part of desensitization. In this type of treatment strategy the formal desensitization is principally used to reduce anxiety reactions sufficiently to enable clients to perform desired responses in previously feared situations where the major extinction of emotional responding takes place.

Self-regulated desensitization can serve not only as an important supplement to symbolic desensitization but as a method of treatment in its own right. Hutchison (1962) successfully treated an electronics technician with a long history of



exhibitionism in 26 sessions by training the client to perform a set of relaxation responses immediately following the occurrence of stimuli that typically preceded genital exposure. The first few interviews were devoted to identifying the essential covariations between social events and the exhibitionistic responses. In this particular case, the critical determinants involved criticism from his supervisor or his wife, and feelings of inadequacy connected with his vocational and personal achievements. The client received training in relaxation until he was capable of inducing rapid and deep muscular relaxation. Thus, by performing the relaxation responses immediately following the occurrence of experiences eliciting exposure, he was able to gain full control over his exhibitionism. A follow-up study conducted one year after the termination of therapy revealed that genital exposure had been

completely eliminated.

Wolpe (1958) reports considerable success with self-conducted desensitization of impotence for males who are sexually responsive, but for whom the anxiety produced by coital performance gives rise to premature ejaculations, or an inability to achieve and maintain an erection. Briefly, the procedure is as follows. The individual first receives training in progressive relaxation as an aid in counteracting anxieties elicited in the sexual situation. In addition, to ensure beneficial outcomes he is advised to engage in sexual behavior only when he has a strong positive desire to do so, and under the most favorable circumstances. He is then instructed to lie in bed with his partner in a relaxed way, but to confine the sexual activity initially to caresses and preliminary love play. In order to avoid any possible reinforcement of anxiety, no attempt at

intercourse is made until sexual inhibitions have been sufficiently reduced. As deconditioning proceeds, the client is likely to exhibit a gradual increase in sexual responsiveness, and eventually coitus can be attempted after adequate erections have been achieved. Additional examples of the use of relaxation by individuals in the self-management of chronic anxiety reactions are provided by Jacobson (1964), and by Haugen, Dixon, & Dickel (1958).

The extent to which a stable change in behavior can be produced by deliberate utilization of self-induced responses that compete with anxiety and supplant it depends upon whether they serve primarily to reduce distress or to neutralize the crucial eliciting stimuli. In applications of relaxation by Haugen, Dixon, & Dickel (1958), for example, people are simply instructed to practice muscular relaxation, but

otherwise the therapists seem to show little interest in the stimulus determinants of emotional responses. Thus, a client who achieves sufficient relaxation to counteract anxiety may gain temporary relief, but if the eliciting cues are absent during this process he will still remain vulnerable to the disturbing stimuli because their arousing properties have in no way been altered. Any deconditioning that may result from an exclusively response-directed program of relaxation will, therefore, depend on the fortuitous contiguous occurrence of eliciting stimuli and anxiety-competing responses. On the other hand, in the prescribed desensitization programs of Hutchison (1962) and Wolpe (1958), clients are encouraged to induce deep muscular relaxation or other competing responses *while exposed to the crucial emotion-provoking stimuli*. Under these temporal conditions, the motivational properties

of stimulus events can be significantly modified.

If the controlling stimuli for emotional responses have not been identified, deconditioning effects may still be achieved to some degree provided the competing responses occur in close temporal relationship. The onset of emotional arousal can serve as a cue signifying the presence of the enigmatic eliciting events. Provided the individual is able to discriminate changes in his arousal and to induce positive responses of sufficient strength immediately at the onset of arousal, the self-produced incompatible responses may coincide with the stimuli eliciting anxiety, thereby ensuring the temporal prerequisites for reconditioning. By contrast, when persons merely engage in relaxation for a given period of time, usually at the end of the day, the eliciting and neutralizing events are essentially uncorrelated.

In most social situations people obviously cannot lapse into complete muscular relaxation. This problem, however, does not impose serious limitations on the utility of relaxation, since a certain degree of stress reduction can be achieved through the selective relaxation of muscle groups that are not in use at any given moment (Jacobson, 1964; Wolpe, 1958). Furthermore, positive imagery and pleasant activities that can be easily engaged in may serve as even more effective stress reducers.

Under free-responding circumstances, the use of positive events in a fear-arousing situation may hasten elimination of avoidance responses because the positive cues enable the individual to expose himself to threats for longer durations, rather than because of their direct counterconditioning effects. Nelson (1966) found that animals willingly entered a feared situation

twice as frequently and remained there approximately three times as long when food was present in the situation as they did when it was absent. However, animals that were confined in the feared compartment for an equivalent period of time without food showed a similar amount of fear reduction. The influential role of duration of exposure on extinction is further corroborated by Proctor (1968) who presented motion pictures of snakes of either 5 or 20 seconds duration to snake-phobic subjects in a desensitization paradigm. The longer exposure produced the greater reduction in avoidance behavior. The comparative data reported by Nelson conflict with Davison's (1968) finding that students who received only exposure to aversive stimuli experienced more distress and less avoidance extinction than subjects who had the same exposure paired with relaxation. Positive events

most likely serve both as incentives for self-exposure to aversive situations and as fear reducers.

Self-administered desensitization has several important limitations as a sole method of treatment. In the first place, individuals often do not have sufficient control over the incidence and intensity of aversive stimuli and the social context in which they occur (Wolpe, 1958). On certain occasions it may therefore be difficult to marshal competing responses of sufficient strength to contravene adverse emotional experiences. Second, people who exhibit strong avoidance tendencies are inclined to shun feared situations even though objectively they may be relatively innocuous. Finally, in cases involving severe and widely generalized inhibitions, the extinction of anxiety may have to commence, under controlled conditions, at the symbolic end of the stimulus



generalization continuum. After emotional responses to imagined threats have been substantially reduced, the individual is in a more favorable position to attempt previously inhibited behavior in progressively more fearful situations.

### **Antagonistic Activities in Counterconditioning**

In order to achieve counterconditioning, aversive stimuli that ordinarily evoke emotional responses are introduced in the presence of incompatible activities. Although relaxation has received greatest attention, a wide variety of operations have been employed for inducing antagonistic response tendencies. The earliest application of this learning principle (Jones, 1924) relied upon *appetizing foods*. This particular case involved a young boy who exhibited severe anxiety responses of unknown origin toward animals, and a host of furry objects including fur

coats, cotton wool, fur rugs, and feathers. In testing the boy's reactions to varied fear-provoking stimuli a rabbit elicited the strongest emotional response, and it was therefore selected as the stimulus to be neutralized.

Counterconditioning was achieved by feeding the boy in the presence of initially weak, but gradually increasing, anxiety-arousing stimuli. While he was eating his favorite food, a rabbit in a cage was placed in the room at a sufficient distance not to arouse emotional reactions more powerful than the positive consummatory activities. Each day the caged rabbit was brought nearer to the table without evoking the customary anxiety responses, and eventually, released from the cage. During the final stage of treatment, the boy not only displayed no fear at having the rabbit placed on the feeding table or even in his lap, but spontaneously verbalized a fondness for the

animal which previously had terrified him. Further objective tests revealed that the anxiety extinction effects had generalized to all the other furlike objects that he had previously feared. Some therapists (Bettelheim, 1950), working within a psychodynamic framework, have made extensive use of appetizing foods in counteracting anxiety responses of emotionally prone children whenever they are about to be exposed to potentially fear-arousing situations.

That food might serve as an effective anxiety neutralizer gains support from the suggestive evidence cited earlier (John, 1961) that the reticular formation possesses reciprocally inhibitory arousal systems that mediate conditioned defensive and alimentary activities. During alimentary activation, response to aversive stimuli is essentially eliminated. It is generally assumed that counterconditioning procedures

employing food are limited in applicability to children in whom emotional arousal cannot be reduced through verbal means. Actually, adults could easily conduct an entire course of desensitization on their own by systematically pairing real, pictorial, or imaginal aversive stimuli with gratifying eating activities. Such contingencies may, in fact, be more easily self-administered than relaxation-based desensitization. Whether this type of approach has counterconditioning capabilities remains to be demonstrated.

It has been shown that *relaxation*, which is most often employed as the stress reducer in desensitization of adults, increases tolerance of aversive stimuli and can facilitate the elimination of avoidance behavior. However, its mode of influence is not well understood. Because of the frequent equation of anxiety with autonomic

reactivity, the research in this area has been almost exclusively concerned with the autonomic effects of relaxation. It has been reported that deep muscular relaxation decreases blood pressure (Jacobson, 1939), pulse rate (Jacobson, 1940), and GSR responsiveness (Clark, 1963). In a more systematic evaluation of the relative physiological effectiveness of relaxation, Grossberg (1965) compared changes in heart rate, palmar conductance, and forehead muscle tension in college students who either performed relaxation exercises to tape-recorded instructions, listened to music they considered relaxing, or were simply asked to relax as best they could without any external aids. No significant differences were obtained among the three groups. The author suggests, however, that these results be accepted with reservation because active muscle contraction during the training

exercises elevates heart rate and lowers skin resistance, which confound the autonomic effects of relaxation.

Paul (1969) conducted a series of studies in which the autonomic effects of muscular relaxation are compared with those accompanying hypnotic suggestions of drowsiness and relaxation and a control condition in which subjects were simply told to relax. A variety of physiological changes are measured including tonic forearm muscle tension, heart rate, respiratory rate, skin conductance, and anxiety differential. Both relaxation training and hypnotic suggestion reduce physiological responsiveness to stressful imagery, but relaxation achieves somewhat greater decrements.

The above studies demonstrate that relaxation induction procedures can decrease physiological

responsiveness. It has been further shown by Grings & Uno (1968), by means of a “compound stimulus transfer” design, that the presentation of an aversive stimulus in conjunction with relaxation reduces the arousal capabilities of the threatening cue. Subjects were separately trained to respond emotionally to a colored light and to relax whenever the word “now” was projected on a screen. In subsequent tests subjects displayed the strongest autonomic responses to the colored fear cue alone, the weakest response when the fear and relaxation cues were presented simultaneously as a compound stimulus, and emotional response of intermediate magnitude to a compound stimulus containing the fear cue and a neutral word cue. Paul (1968b) reports a positive relationship ( $r = .50$ ) between a composite physiological index of degree of relaxation and reduction in stress response. However, a tape-

recorded relaxation procedure was less effective than a socially administered one, both in inducing relaxation and in attenuating arousal to stressful imagery.

A muscular relaxation procedure includes at least three distinct components: calming suggestions of tranquility and relaxation, positive imagery, and tensing and relaxing various muscle groups. The effects of these components need to be studied separately to determine whether the muscular activity per se is a significant contributor to reductions in arousal level. It seems unlikely that physiological research will clarify behavioral counterconditioning effects to any great extent until a viable theory is advanced regarding the nature and locus of the mechanisms which control emotional behavior. Since evidence strongly supports a central rather than a peripheral view of anxiety, it would be especially important to study



the effects that relaxation, or any other anxiety-neutralizing activity that might be employed in counterconditioning, have upon central arousal mechanisms.

Lazarus & Abramovitz (1962) have occasionally relied upon *positive imagery* for modifying fearful behavior of children for whom relaxation was not feasible. This procedure is identical with the standard method of desensitization except that the graded aversive stimuli are presented in the context of strong positive ideations. The child is interviewed on his areas of interest and his idols, usually drawn from television, movies, fiction, or the child's own imagination. "The child is then asked to close his eyes and told to imagine a sequence of events which is close enough to his everyday life to be credible, but within which is woven a story concerning his favorite hero [p. 192]." After a

sufficient degree of positive affect has been created, the therapist introduces into the narrative the lowest item in the hierarchy and the child is instructed to signal if he feels afraid, unhappy or uncomfortable. When the child registers disturbance, the threatening element is immediately withdrawn, and the positive imagery is further enhanced. This procedure is continued until the most phobic item has been neutralized. In most cases arousal-reducing imagery can be presented and controlled more effectively in discrete conditioning trials rather than in the form of a continuing narrative. Pleasant imagery and mollifying thoughts are often used in this manner with adults to enhance the tranquilizing effects of relaxation procedures. No attempts have been made, however, to assess the physiological effects of positive imagery, or to determine whether it accelerates extinction of avoidance behavior.

Those who often mediate pleasant experiences or the reduction of discomfort in others are likely to acquire positive properties; consequently, the mere presence of such an individual will elicit positive affective responses that can serve as anxiety neutralizers. Frequent social contact, even though unaccompanied by nurturant functions, may also endow others with positive valence (Cairns, 1966; Homans, 1961). That familiar social stimuli can function as anxiety reducers has been clearly shown with both humans and infrahuman subjects. Mason (1960) found that responses indicative of emotional disturbance were exhibited less frequently to stressful situations by monkeys in the presence of peers than in the company of adult monkeys (whom they had rarely seen since birth), other animals, or when they were left alone in the situation. The influence of familiarity on social stress reduction receives

further support from a study by Kissel (1965) conducted with college students. A friend's company was found to be more effective in diminishing autonomic arousal to induced failure than that of a stranger, whose presence had no distress-reducing value.

There is reason to expect from the above laboratory findings that *relationship-induced responses* can serve to mitigate emotional arousal to some extent. Wolpe (1958), in fact, contends that favorable outcomes achieved by traditional interview methods primarily derive from inadvertent counterconditioning of anxiety by positive responses evoked in the client-therapist relationship. This interpretation is consistent with Shoben's (1949) conceptualization of the treatment process as one in which symbolically reinstated anxiety is counterconditioned through association with comfort reactions made by the

therapeutic relationship. Although this type of deconditioning is possible, the outcome data reviewed in the introductory chapter suggest that it does not occur with any degree of consistency. The high dropout rates and frequent displays of avoidance behavior by clients who continue in treatment suggest that therapists are more likely to arouse anxiety than comfort reactions. Many of the widely prescribed therapist-role behaviors would, in fact, be clearly contraindicated if judged primarily in terms of their comfort-inducing function. Therapists of psychoanalytic persuasion, for example, strive hard to maintain a high degree of ambiguity on the assumption that ambiguity facilitates and intensifies transference responses. Controlled studies (Bordin, 1958; Dibner, 1958), on the other hand, demonstrate that the amount of anxiety experienced by a client varies positively with the ambiguity of the therapist. Thus, while

ambiguity may facilitate generalization of inappropriate response patterns, it is antithetical to counterconditioning.

The fact that strength of relationship-produced responses cannot be easily controlled or rapidly increased if necessary to counteract strong emotional arousal places additional limitations on the extent to which relationship variables alone can create the requisite conditions for successful desensitization. Positive relationship-induced responses may thus serve as an important adjunct to, but not a reliable substitute for, more powerful anxiety-neutralizing procedures. Even if the necessary competing comfort reactions were strongly established, desensitization outcomes would remain unpredictable if the introduction of emotionally disturbing contents was primarily left to the vagaries of clients, rather than carefully regulated by psychotherapists.

Some of the procedures employed in counterconditioning treatments, such as relaxation and pleasant imagery, for the explicit purpose of inducing strong comfort reactions, can also enhance the anxiety-reducing cue value of the therapist. An early hypnosis study conducted by Estabrooks (1930) demonstrated that even a person who, in the experiences of subjects, had been indirectly associated with relaxation acquired deactivation properties. During early phases of this experiment, subjects' level of autonomic arousal decreased only as hypnosis was induced. However, after they had been hypnotized a number of times, the mere presence of the apparatus operator before the induction of hypnosis produced much the same decrease in arousal level. As would be expected, this phenomenon did not occur with a subject who had had a negative experience with the operator

sometime prior to the experimental session.

The rate at which emotional behavior is extinguished by therapeutic agents who vary in their stress-reducing properties has not been systematically investigated. Informal observations of cases where parents serve as therapists in eliminating their children's phobic behavior (English, 1929) have suggestive value and are in accordance with experimental findings. A 7-month-old child developed marked fear of a stuffed cat on the basis of a sudden aversive experience. In an effort to extinguish this fear a therapist presented the stuffed animal repeatedly, but each time the child responded with withdrawal, trembling, and frightened wails. When the cat was later offered in the presence of both parents, she accepted it hesitantly but continued to exhibit some apprehensiveness. A brief experience during which the child handled



the toy while she was held in her mother's arms effectively eliminated the residual fear responses; thereafter, the child readily accepted the stuffed animal and played happily with it. The differential distress shown by the child to the feared object when the parents were present and absent is similar to Liddell's (1950) findings with infrahuman subjects that the presence of a mother increases her offspring's tolerance of stressful stimuli. Although the relative efficacy of different persons for mitigating emotional disturbance was not explored, Bentler (1962) reports a case in which a mother completely extinguished an aquaphobia in her infant daughter by reexposing her to progressively larger amounts of water in the context of close maternal contact supplemented by a highly prized flotilla of toys. Most parents similarly function as effective anxiety reducers in modifying their children's

fears of loud noises, heights, darkness, animals, and other common fear-provoking situations (Jersild & Holmes, 1935).

*Pharmacologic agents* that decrease emotional arousal have also been occasionally employed in cases where psychological procedures for inducing competing activities have proved either ineffective or not feasible for various reasons (Friedman, 1966; Walton & Mather, 1963b). Brady (1966) has made extensive use of short-acting barbiturates (e.g., methohexitone sodium) in conjunction with relaxation instructions as a quick means of producing deep muscular relaxation. This method was applied with notable success in the treatment of severe frigidity in women who rarely engaged in coitus because it caused them considerable physical pain, revulsion and anxiety. After they were desensitized to individualized sex-anxiety hierarchies they not only became

considerably more sexually responsive but found intercourse erotically pleasurable. In a later paper Brady (1967) reaffirms the efficacy of desensitization based on drug-induced relaxation with a variety of anxiety disorders. Friedman (1968) reports similarly high success rates in the treatment of impotence by drug-assisted desensitization.

The foregoing results are sufficiently promising to warrant systematic comparative evaluations of the degree to which, if any, drug-produced effects facilitate the counterconditioning process. There is some laboratory evidence to indicate that the beneficial tranquilizing effects of drugs may be partially offset by their retarding effects on learning (Cole & Gerard, 1959; Mitchell & Zax, 1959; Schneider & Costiloe, 1957). Not only can conditioning be impeded but, if results from animal experimentation are applicable to humans,

changes induced during a drugged state may have limited transfer value. Barry, Etheredge, & Miller (1965) found that varying dosages of amobarbital sodium enabled animals to resume a food-producing response that was previously inhibited by fear conditioning, but the reduction of behavioral inhibition failed to transfer to the normal nondrugged state. A study by Sherman (1967) suggests, however, that the transfer decrement might be obviated by a treatment procedure involving progressive reduction in dosage of the fear-reducing drug. Amobarbital sodium restored previously inhibited behavior in animals during the sedated state; however, subjects who experienced abrupt withdrawal of the drug exhibited a precipitous decrement in performance to the level of the saline control group, whereas those who continued to receive the drug in progressively smaller amounts showed

a monotonic increase in responsiveness. Apparently, a gradual drug-withdrawal treatment can facilitate permanent extinction of fear-mediated behavior although, as the author notes, the relative superiority of this approach cannot be determined without data from a group that is deconditioned under a constant drug dose for an equivalent period of time before the drug is abruptly withdrawn.

The question remains as to why organisms that repeatedly perform feared responses, which are intermittently rewarded during a drugged state, fail to display some degree of permanent fear extinction. One interpretation, favored by Barry, Etheredge, & Miller (1965), assumes that lasting extinction does occur, but transfer of therapeutic effects is impeded by marked stimulus change resulting from the shift from sedated to normal states. Considering that avoidance behavior is

extensively controlled by external stimuli, it seems improbable that changes in internal stimulation adequately explain why animals may show a dramatic loss from 200 rewardable responses while under the influence of the drug to only 3 scattered responses in the same situation under nondrugged conditions (Sherman, 1967). An alternative interpretation would involve learning rather than generalization deficits. Drugs, particularly in higher dosages, may produce not only transient deactivation but also impairment of learning functions. Behavioral changes which are primarily chemically induced would not be expected to persist after pharmacologic recovery. On the other hand, optimal drug dosages that produce beneficial tranquilizing effects without adversely affecting learning processes might augment extinction of the anxiety-arousing potential of aversive stimuli. Even if comparative

evaluations showed this to be the case, pharmacologic aids should be primarily confined to persons who do not benefit from exclusively psychological procedures. In view of the unpleasant effects of intravenous injections and the potential dangers of drug dependency with repeated usage, the extinction gains would have to be substantial to justify frequent use of drugs as adjuncts to standard counterconditioning procedures.

It should also be noted in passing that persons who routinely consume “tranquilizing” drugs will not necessarily experience progressive extinction of emotional responses. Achievement of lasting deconditioning outcomes requires both the presence of a tranquil or positive emotional state of sufficient strength, and judicious reexposures to crucial anxiety-evoking stimuli. These learning requisites are rarely obtained in experiences of

everyday life. On the contrary, persons are often prematurely confronted with excessively threatening situations that result in the reinforcement of avoidant behaviors rather than in their extinction. The more severely incapacitated cases, on the other hand, are usually too heavily sedated to be capable of much reconditioning.

### **Physiological Accompaniments of Emotional Behavior**

Theories of personality and psychotherapy generally differentiate among types of “impulses” or emotional states as though they represented distinct forms of physiological arousal. Thus, in one case a person is assumed to be suffering from “repressed hostile impulses” and is therefore encouraged to express verbal or physical aggression designed to discharge the troublesome hostile affective state. In another case, “anxiety”



may be regarded as the major emotional condition that presumably reflects a somewhat different form of physiological arousal. If emotional behaviors which are designated as anger, fear, or euphoria were controlled by separate physiological events, then different types of treatments might be required to extinguish diverse types of emotional behavior.

Physiological studies disclose that the varied array of emotions that people experience phenomenologically are not accompanied by a corresponding diversity in physiological response patterns. In the procedures commonly used individuals are subjected to fear- or anger-provoking stimulation during which changes in numerous physiological responses are simultaneously recorded. Interpretation of these findings is complicated by lack of independent evidence that the two stimuli are of comparable

aversiveness. It is consequently difficult to determine whether obtained differences are attributable to dissimilarities in the qualitative features or in the relative intensities of the aversive stimuli. Moreover, as Duffy (1962) has noted, unless it has been shown that dissimilar stimuli within the same emotional class produce identical patterns of physiological arousal, the generality of findings yielded by a single fear stimulus and a single anger stimulus is open to question.

Based on manipulations in which subjects experienced increasing shock while the experimenter expressed alarm about a dangerous high-voltage short circuit in the apparatus, and in which they also received rude sarcastic treatment by an assistant, Ax (1953) found some subtle differences in physiological reactions to the fear and anger provocation. Data reported by

Schachter (1957) using analogous manipulations disclose essentially similar cardiovascular responsiveness to fear and anger stimulation, but they both differ significantly from reactions to pain induced by a cold pressor test. However, on the basis of subjective categorization of the data the author extracts greater physiological specificity than the actual findings warrant. It seems unlikely that small differences in an otherwise identical pattern of physiological reactivity are sufficiently discriminable, if at all, to serve as the cues for differentiating among different emotional states.

Results of both physiological and psychological studies support the conclusion that a common diffuse state of physiological arousal mediates diverse forms of emotional behavior and that different emotional states are identified and discriminated primarily in terms of external

stimuli rather than internal somatic cues. Among the situational cues that help to label a given state of physiological arousal, the *inducing stimulus conditions* undoubtedly play an influential role. Thus, for example, visceral arousal that is generated by threatening stimulation is likely to be interpreted as fear or anxiety; arousal produced by obstacles and thwarting activities of frustrating agents will tend to be experienced as anger; and arousal resulting from highly pleasurable stimulation will be identified as joy or euphoria. In a study designed to identify the characteristics of situations that might serve as cues for differentiating among emotions Hunt, Cole, & Reis (1958) found that students were inclined to rate environmental events as provoking fear when they were threatening, as anger when frustrating agents figured prominently, and as sorrow when desired objects

were irretrievably lost.

Even the same inducing operation and its associated physiological arousal may result in differential emotions depending on the form of *affective modeling cues* which serve to define the appropriate emotional behavior under conditions of ambiguity. According to the theory of emotion advanced by Schachter (1964) when a person experiences a state of physiological arousal and cannot clearly identify its source, the same emotional condition may be interpreted as anger, euphoria, anxiety, or some other type of feeling depending upon the nature of external influences. The interaction between modeling, cognitive, and physiological determinants of emotional state is revealed in an experiment by Schachter & Singer (1962) which proceeded in the following manner. One group of college students received injections of epinephrine, a sympathetic stimulant, and was

at the same time correctly informed of its physical side effects. A second group of subjects was similarly administered epinephrine but was uninformed about its side effects, while other students received a placebo injection of saline solution. Immediately after the experimental manipulation of physiological arousal, all subjects were sent to a room where they were exposed to the experimenter's confederate, supposedly another subject, who displayed considerable anger and verbal aggression toward the experimental procedure. Subjects in the epinephrine-uninformed group displayed more anger than students in either the epinephrine-informed or placebo condition, which did not differ from each other. In another phase of this experiment, four treatments were employed, the three described above and one in which subjects were injected with epinephrine and deliberately misinformed

concerning its side effects so they had no adequate explanation for their aroused state. The confederate in this phase behaved in an extraordinarily euphoric manner, for example, flying paper airplanes, hoola-hooping, and playing basketball with equipment contained in the room. Subjects who experienced physiological arousal and were misinformed or uninformed concerning the basis for their reactivity displayed a great deal of euphoria, whereas subjects who were equally aroused but for whom an accurate explanation was available, and the nonaroused placebo group, were little affected by the behavior of the confederate.

In a related experiment, Schachter & Wheeler (1962) extended the range of autonomic arousal by administering either epinephrine, a placebo saline solution, or chlorpromazine, a sympathetic depressant, to different groups of subjects. After

receiving their injections all subjects viewed a slapstick comedy film. The epinephrine-injected group showed a greater amount of amusement, assessed both by self-reports and behavioral ratings, than placebo subjects, while the chlorpromazine-injected group was least affected by the comical displays.

Further research conducted by Nisbett & Schachter (1966) showed that emotional states induced by environmental stimuli are manipulable to some extent, as was demonstrated with drug-induced arousal. Students were administered either weak or severe electric shocks after receiving a placebo pill. Half the subjects within each condition were led to believe that the side effects accompanying the drug were similar to shock- produced emotional reactions, whereas the remaining subjects were correctly informed that shock evokes arousal symptoms such as



palpitations and tremors. Students who received weak shock and attributed their autonomic arousal to the pill tolerated more painful stimulation and reported less pain than those who interpreted their arousal as due to shock. However, ascribing arousal to an artificial source had no influence on pain tolerance when the shocks were severe. The latter findings indicate that arousal states are less susceptible to relabeling when the controlling stimuli are apparent and powerful.

Taken together, the studies demonstrate that emotional states are partly a function of the degree of physiological arousal, but that social and cognitive variables may play a crucial role in determining both the nature and intensity of the emotions experienced, particularly when individuals cannot accurately label the source of their aroused condition. Thus, the same state of

physiological arousal can be experienced as euphoria, anger, or some other type of emotional condition depending upon defining cognitions and the affective reactions of others to arousal-inducing situations.

The preceding findings have several important therapeutic implications. It is not necessary to reduce specific types of physiological arousal in order to modify different forms of affective behavior. To the extent that counterconditioning procedures can successfully neutralize the arousal potential of valenced stimulus events, then the method should be applicable not only to problems of anxiety but also to emotions experienced as hostility, jealousy, grief, or by some other name. It should also be possible to decrease positively labeled emotions by this means if the theory of nonspecific visceral control is valid. Finally, some emotional problems might result from mislabeling

of feeling states; given this, the person would need to be taught to discriminate accurately the determinants of his arousal states.

People often experience anxiety arousal without being able to identify the evocative stimuli. In interpretive therapies such emotional responses are frequently attributed to hypothetical causes operating at an unconscious level. If emotional arousal can be reduced to some extent by misattributing the reactions to non-emotional sources, then it is conceivable that neutral stimuli could become invested with fear-arousing properties if they are erroneously interpreted as the source of anxiety reactions.

## Summary

In this chapter the principle of counterconditioning has been discussed in relation to the modification of emotional behavior

by neutralizing the arousal potential of threatening stimuli. The reconditioning process is achieved by inducing activities incompatible with emotional responses in the presence of anxiety-arousing stimuli. This mode of behavior change is based on the fact that classically conditioned effects can exert mediating control, principally through central mechanisms, over instrumentally learned behavior.

Three sets of variables, some necessary and others merely facilitative, have been singled out as especially relevant to counterconditioning processes. First, one must select an anxiety-neutralizing stimulus capable of eliciting competing events of sufficient strength to predominate over responses characteristically evoked by emotion-arousing cues. In practice, muscular relaxation, appetizing foods, positive imagery, relationship-induced affective responses,

and pharmacological agents that decrease emotional arousal have been employed as anxiety neutralizers. These types of competing activities have been shown to increase tolerance of aversive stimuli, accelerate the rate of desensitization, and generally facilitate extinction of severe avoidance behavior.

The second class of variables pertains to emotion-provoking events. The issues here concern accurate identification of the stimulus determinants of emotional behavior, and the forms and intensities in which arousal stimuli are neutralized. Counterconditioning treatments are typically directed toward symbolic representations of actual threats because, in the latter form, they can be easily controlled and the method can be applied to an almost infinite variety of anxiety sources. However, in cases where symbolic stimuli lack arousal capacity or requisite

conditions for achieving desensitization cannot be adequately induced through verbal means, actual threats are presented in physical, pictorial, or auditory modes.

In most applications of the counterconditioning principle, the aversive events are initially administered in attenuated forms so that the emotional responses to be counteracted are relatively weak and can therefore be readily extinguished. As weak items lose their anxiety-producing value, progressively more threatening stimuli, which presumably have been weakened through generalization of extinction effects, are gradually introduced. Although stimulus gradation is not a necessary condition for achieving desensitization, it permits greater control over the change process and produces minimal anxiety elicitation as compared to approaches involving repeated confrontation with

stimuli having high threat value.

The third variable pertains to the temporal prerequisites for the occurrence of counterconditioning outcomes. Both the anxiety-neutralizing and the aversive events must be contiguously associated. The mechanism of conditioning is conceived as including both mediational and association processes.

Numerous laboratory investigations and controlled individual studies utilizing the symbolic desensitization paradigm with relaxation show this approach to be effective for extinguishing the emotional arousal capacity of aversive stimuli and for reducing avoidance behavior. Moreover, generalized improvements in behavioral functioning often result from specifically induced changes. However, more refined analyses of degree of transfer of extinction effects from

symbolic stimuli to real-life situations disclose some generalization decrement. Not only is the number of approach responses that persons can perform behaviorally generally less than the number that have been successfully neutralized in symbolic form, but restored approach behavior is usually accompanied by moderate anxiety when first performed. This transfer decrement partly reflects the inherent limitations of working exclusively with symbolic counterparts which rarely encompass the full range of aversive elements contained in real-life situations. Counterconditioning alone is also likely to effect limited behavioral improvements in conditions where anxious responding is a realistic consequence of behavioral deficits, or where the rewards associated with restored functioning are outweighed by the advantages of remaining behaviorally incapacitated.



Symbolic desensitization might primarily serve to decrease the anxiety-producing value of aversive stimuli below the threshold for activating avoidance behavior, thus enabling persons to engage, though somewhat anxiously, in new approach behavior. This provides the opportunity for further extinction of residual anxiety and avoidance behavior in naturalistic settings. Also, in cases involving severe anxiety disorders, deconditioning may have to commence with symbolic stimuli that are far enough removed from real threats to evoke less intense reactions. After emotional responses to imaginal stimuli have been substantially reduced, the individual is better prepared for encounters with the corresponding real-life situations. Emotional behavior can be most thoroughly extinguished by supplementing symbolic desensitization with graded performance tasks, positive reinforcement

of desired approach behavior, and appropriate modeling procedures. It is possible that the efficacy of desensitization itself can be further enhanced, and transfer problems reduced, by the use of more tangible threats along with more powerful competing activities.

The behavioral changes achieved by desensitization operations cannot be attributed solely to the conditioning of competing responses to fear-arousing stimuli through repetitive paired association. Other mechanisms are also operative. Some reduction in avoidance behavior undoubtedly results from selection of explicit behavioral objectives and positive reinforcement of progressive advances toward the chosen goal. The resultant changes also partly reflect the influence of exposure to aversive stimuli independently of the effects of the explicitly programmed competing activities. For this reason,

the multiform procedure combining graduated exposure, anxiety-neutralizing events, and positive reinforcement is generally more effective in extinguishing avoidance behavior than the separate components alone.

Although counterconditioning methods have been primarily employed to extinguish “anxiety,” evidence that diverse emotional behaviors are mediated by a common diffuse state of physiological arousal indicates that this approach may be applicable to other emotional conditions as well. Furthermore, counterconditioning procedures can be utilized not only to neutralize aversive events but also to attach negative valences to positive stimuli which are potentially harmful. The principles governing these aversive forms of counterconditioning are discussed in the following chapter.

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## Aversive Counterconditioning

In the preceding chapter it was shown how threatening events can be neutralized by associating them with positive experiences. Some forms of psychological dysfunctions reflect a converse problem, resulting from the fact that certain activities or objects, which are potentially harmful or socially prohibited, have acquired unusually potent reinforcing value for the individual. These deviations generally take the form of addiction to various drugs or intoxicants, or marked sexual attraction to inappropriate stimuli as manifested in transvestism, fetishism, exhibitionism, homosexuality, and other aberrant sexual expressions. Attempts are sometimes made

to control such behavior by developing conditioned aversion to the positively reinforcing stimuli by pairing them contiguously with negative experiences. A variety of methods has been devised for producing conditioned aversion. These have been applied mainly to persons who wish to gain control over intractable behavior which can produce serious long-term consequences for them.

The classical conditioning approach to the elimination of aberrant response patterns should be distinguished from aversive instrumental conditioning, discussed in Chapter 5, in which response tendencies are inhibited by having punishing consequences follow the occurrence of the behavior. In the classical conditioning paradigm, aversive events are *stimulus correlated* for the purpose of altering the valence of stimuli, whereas in the instrumental procedure, negative

outcomes are *response correlated* so as to inhibit the performance of deviant responses. Punishment that is made contingent on the appearance of undesired behavior may temporarily suppress its occurrence, but if the positive stimuli that evoked the behavior are absent during the punishment they are likely to retain their attractiveness. Although the classical and the instrumental approaches can be easily differentiated operationally, the latter procedure often produces some classical conditioning effects. When a given behavior is punished, stimuli arising from the punished response itself, and environmental events present at the time, may become endowed with negative properties. Thus, for example, in treatment programs in which aversive stimulation is presented to alcoholics in the act of drinking alcoholic beverages, and to transvestites while they are putting on ladies'



undergarments, the designation of the procedure is somewhat arbitrary.

## **Development of Conditioned Aversion and Avoidance**

The basic process involved in the development of conditioned aversion and avoidance has been discussed in some detail in Chapter 5. Briefly, an object or an activity that is repeatedly associated with aversive experiences acquires some of the negative properties of the aversive stimulus. As long as the negatively conditioned stimuli retain their aversive effects, the individual will be inclined to avoid them.

In most laboratory investigations of conditioned aversion, formerly neutral stimuli are endowed with negative properties. Of greater relevance to issues of behavioral change, however, are studies showing that aversion can be

established to strongly preferred stimuli (Garcia, Kimeldorf, & Koelling, 1955; Masserman, 1943; Peacock & Watson, 1964). Although the phenomenon has been demonstrated, there has been no systematic research to determine the optimal conditions for creating persistent aversions.

#### *UNCONDITIONED STIMULI IN AVERSIVE COUNTERCONDITIONING*

Until recent years, most applications of aversive counterconditioning have utilized *nauseous pharmacological agents* to create the requisite negative conditions. The specific procedures followed in this form of therapy are well illustrated by Lavin, Thorpe, Barker, Blakemore, & Conway (1961) in their treatment of a male transvestite. The client, a 22-year-old married truck driver, frequently dressed in women's clothing, a pattern of behavior that began

in early childhood when he occasionally wore his sister's dresses. After puberty he experienced orgasms when dressed in female apparel, and masturbated to the accompaniment of transvestite fantasies. Cross-sex dressing had become a powerful sexual reinforcer, but the fear of serious legal consequences, since he occasionally appeared in public in feminine attire, and pressures from his wife, led the client to seek treatment.

This case illustrates careful application of several of the requirements for successful counterconditioning. In selecting the conditioned stimulus it is necessary to determine what specific aspects of the stimulus events are most positively valenced. In this particular case, for example, it was noted that the texture or feel of women's clothing produced no sexual excitement, but viewing himself in a mirror dressed in feminine

apparel was highly stimulating. It was decided, therefore, to employ a series of colored slides of the client in various stages of female dress, ranging from panties only to fully clothed, in order to condition negative reactions to all aspects of cross-sex dressing. In addition, a tape recording of the client describing the transvestite behavior depicted (e.g., "I have now put on and am wearing a pair of ladies' panties") accompanied each slide. The auditory cues were primarily designed to augment the conditioned stimulus, to ensure the presence of the stimulus when the client might not be attending to the pictorial displays, and to facilitate generalization effects.

Intramuscular injections of apomorphine hydrochloride served as the unconditioned stimulus, although occasionally emetine hydrochloride was substituted after the client's tolerance to apomorphine had increased. As soon

as he reported feeling nauseous, a slide was projected onto the screen and simultaneously the tape recorder was started; the pictorial and auditory stimuli were promptly terminated after emesis. The client received 66 emetic trials, one every two hours, for six days. As aversive conditioning progressed, transvestism assumed sufficiently unpleasant properties that the client no longer derived any erotic satisfaction from cross-sex dressing. A series of follow-up, interviews with both the client and his wife revealed complete cessation of transvestism, and continued indifference to clothes that had previously excited him.

Later sections of this chapter review numerous studies in which emetic drugs, usually apomorphine or emetine, have been employed to create aversion. There are, however, many disadvantages in pharmacological procedures that

place certain limitations on their utility and applicability.

Stimuli contiguous with the onset of aversive experiences gradually acquire negative properties, whereas stimuli associated with reduction or termination of discomfort may actually acquire a palliative function (Mowrer, 1960). One must, therefore, exercise precise control over the timing and sequence of stimulus variables in order to ensure that positively reinforcing events are accruing negative, rather than discomfort-relief, value. The optimal temporal requirements are difficult to achieve with the use of biochemical agents because of the gradual, and often unpredictable, onset of physiological reactions. As a consequence, the presentation of conditioned stimuli is typically delayed until some time after persons begin to exhibit nauseous reactions or other signs of mounting discomfort. In addition to

the temporal issue, it has been shown (Fromer & Berkowitz, 1964) that aversive stimuli with a gradual onset produce significantly weaker aversion responses than those with a sudden onset. Since there is no effective way of terminating abruptly drug-induced aversive states, the nauseous reactions are needlessly prolonged. Moreover, because they also tend to subside gradually, the therapist lacks reliable criteria for timing the withdrawal of conditioned stimuli to prevent their association with the reduction of discomfort.

Apart from the problems created by inadequate control over the rate of onset, duration, intensity, and recovery time of drug activity, undesirable physiological side-effects are sometimes produced, requiring the administration of additional medicinals. Some of the actions of drugs that accompany, but are unrelated to, the

effects for which they are being administered may, of course, impair the conditioning process itself. Central depressants have been shown to decrease conditioning, whereas stimulant drugs facilitate the formation of conditioned responses (Franks, 1966). Emetine is, therefore, generally favored because apomorphine has sedative effects. When the latter drug is employed, stimulants such as dexamphetamine sulphate (Lavin et al, 1961) or caffeine (Freund, 1960) are usually administered to counteract its depressant action. The ideal pharmacological agent would be a stimulant drug that produces brief and readily controllable emetic responses and is free of adverse side effects. Although emetine is more suitable since it does not possess depressant properties, its frequent administration may result in cardiovascular sequelae (Barker, Thorpe, Blakemore, Lavin, & Conway, 1961). Finally, the use of pharmacological



methods necessitates hospitalization and imposes certain limitations on the manner in which the conditioned stimuli can be presented.

*Aversive electrical stimulation* has been increasingly employed in aversion treatment, mainly because it permits precise control over conditioning variables (Rachman, 1965). Aversive shocks can be presented and terminated abruptly; they can be easily varied in duration and intensity; also, except in the case of cardiac disorders, they produce no adverse physiological effects. This increased control makes it possible not only to arrange optimal temporal relationships between conditioned and unconditioned stimuli but also to conduct numerous aversion trials within the same session. The treatment can even be self-administered in the naturalistic situations in which the problem behavior is evoked.

During conditioning trials moderately severe shocks are administered either to the forearm (Kushner & Sandler, 1966) or to the feet (Blakemore, Thorpe, Barker, Conway, & Lavin, 1963) of the client in conjunction with the elicitors of the undesired behavior. A number of shock trials are presented during each of the sessions, which are scheduled over a period of a week or two.

It is sometimes difficult to introduce into treatment the stimulus events for deviant behavior in the forms and intensities in which they are ordinarily encountered in everyday situations. Consequently, aversion reactions may be conditioned to verbal, pictorial, or imaginal representations of the actual stimulus objects, with the hope that sufficient transfer will occur to inhibit approach tendencies to the real-life counterparts. McGuire & Vallance (1964) have

devised a portable electric stimulation apparatus that makes it possible for the client, after some preliminary training, to carry out his own counterconditioning in naturalistic settings whenever he feels impelled to perform the deviant behavior.

The utilization of the self-conditioning procedure is illustrated in the treatment of a 25-year-old graduate student who had been masturbating to fetishistic fantasies with considerable guilt about three times a day for 10 years. The client began aversion therapy after having participated in conventional treatment, which had reduced neither his fetishistic masturbatory behavior nor the attendant guilt feelings. In the initial phase of treatment, the client was asked to produce the usual fantasies and to signal by raising his hand when the fetish objects were clearly visualized, at which time a shock was

administered. At later sessions, when the client was unable to conjure up the sexually provocative fantasies, photographs of persons attired in the fetishistic clothing were employed as the conditioned stimuli. In addition, he was encouraged to use the conditioning apparatus at home whenever he felt instigated to masturbate. The fetishistic fantasies were completely eliminated within a short period, the incidence of masturbatory behavior was substantially reduced, and on the occasions when the client did masturbate, for the first time in his life this behavior was accompanied by heterosexual fantasies. The authors report favorable outcomes in the use of the self-conditioning procedure for reducing obsessional ruminations, obesity, smoking, and alcoholism. Similarly, Wolpe (1965) was able to achieve temporary control over drug-addictive behavior in a physician by having him

administer to himself a shock from a portable apparatus whenever craving for the drug appeared.

In the methods discussed thus far, aversive counterconditioning is accomplished through repeated association of pharmacologically created nausea or unpleasant electrical stimulation. A much more interesting approach, that has numerous advantages over noxious physical stimuli, involves *symbolically induced aversion*. In this form of counterconditioning, positively valenced events are repeatedly paired with strong feelings of nausea and emetic responses which are verbally induced. The negative verbal contents are usually drawn from disagreeable, painful, or revolting experiences that have previously arisen either in connection with the pleasurable objects and activities or in other contexts. As in the other paradigms, the conditioning trials are continued

until the formerly positive stimuli alone elicit feelings of revulsion.

Miller (1959, 1963) provides several illustrations of the successful use of symbolic aversion methods in modifying homosexuality and alcoholism. Most homosexuals have experienced specific disgust reactions, at one time or another, in intimate relationships with certain male partners. During treatment hypnotically revived nauseous reactions, which the client has experienced in previous homosexual contacts, are repeatedly associated with visualized homosexual practices involving current male companions. One client, for example, had felt strong revulsion to the smell and taste of urine and stale perspiration while performing fellatio with an uncircumcised male. These past experiences were, therefore, employed as aversive verbal stimuli in the treatment. The author reports that after several

sessions the client became nauseated by his male lovers and eventually broke off all homosexual contacts.

Avoidance responses established in this manner are typically reinforced by supplementary conditioning trials at monthly intervals for the first year. In addition to attaching negative valence to homoerotic responses and love objects, symbolic counterconditioning procedures are also employed to enhance the positive reinforcing value of heterosexual stimuli. In the preceding illustrative case the client participated concurrently in a number of sessions in which certain feminine attributes that he found desirable were hypnotically augmented and associated with women. Although on the few occasions when the client had formerly dated girls he had selected masculine types, following the counterconditioning treatment he was attracted

to, and dated, women possessing notable feminine attributes.

In aversion treatment of alcoholism, which is reviewed later, verbally revived hangover experiences are contiguously associated with the smell and taste of alcoholic beverages. Essentially similar symbolic aversion techniques have been applied on a limited basis to the treatment of obesity (Cautela, 1966), alcoholism (Abrams, 1964; Anant, 1967), addictions, and sexual perversions (Kolvin, 1967). The major advantages of this technique are that it has no adverse side effects, it is highly adaptable, and people can be taught to administer the treatment to themselves in the naturalistic situations in which their problem behavior is apt to arise.

#### *PROCESS GOVERNING CONDITIONED AVERSION*

The manner in which aversive procedures are



employed and the durability of resultant aversions are likely to be influenced to a considerable extent by one's conceptualization of the mechanism through which aversive stimulation produces its effects. Most traditional accounts of counterconditioning convey the impression that, as a result of paired association with negative experiences, formerly positive stimuli directly and automatically evoke aversive reactions. The temporal relationship between stimulus events is therefore considered to be a major determinant of the strength and durability of conditioned aversions. As will be shown in the following chapter, this nonmediational view is at variance with certain experimental findings. It has been demonstrated, for example, that both conditioned autonomic and avoidance responses promptly disappear when shock electrodes are removed or subjects are merely informed that a given stimulus

will no longer be accompanied by painful stimulation. Moreover, conditioned emotional responses can be established cognitively without the immediate support of external aversive stimulation. Since in aversion treatments the negative experiences associated with pleasurable activities are arbitrarily rather than intrinsically related to the behavior, individuals can readily discriminate that in everyday life the same activities will not only be unaccompanied by unpleasant consequences but may, in fact, prove highly rewarding. Given cognitive control over conditioning effects and markedly different situational contingencies, one might expect conditioned aversions to be readily extinguishable and to show little transfer from treatment to real-life situations. On the other hand, there is considerable evidence that established revulsions usually generalize across situations and that they

can be relatively long lasting.

An alternative view of counterconditioning effects is that external stimuli acquire the capacity to activate a self-stimulation mechanism which, in turn, produces the aversive reactions. Thus, for example, after a person has repeatedly experienced strong nausea in conjunction with alcoholic beverages the mere sight or smell of alcohol leads him to revivify his past nauseous experiences. In this conceptualization aversive reactions are, in large part, self-induced rather than automatically evoked. If the aversive self-stimulation established through counterconditioning is potent enough, a person may be able to counteract the disposition to engage in deviant behavior by symbolically reinstating nauseous reactions whenever the need arises.

The manner in which counterconditioning is applied will differ in several important respects depending upon whether it is viewed as a form of automatic immunization or as a technique of self-control. In the former case, methods are favored that permit precise management and split-second timing of stimulus events. In the latter approach, on the other hand, the procedures are designed to develop strong and readily recreatable aversions to certain objects or activities. For this purpose, verbal and pharmacological agents may regenerate more natural and symbolically reproducible aversions than electric shock, the physiological manifestations of which are relatively subtle. An optimal procedure might initially involve the combined use of verbal induction and either emetic drugs or shocks to create vivid aversive reactions. In subsequent sessions, however, verbal stimuli alone would be

used as the conditioning agent although they might be paired occasionally with emetic drugs or shock to preserve their potency. After an aversive self-stimulation system had been established in sufficient strength, individuals would be instructed to avoid engaging in the deviant behavior by deliberately inducing nauseous reactions. When conditioned aversions are regarded as self-induced reactions rather than as automatic products of stimulus pairings, the change agent assumes greater responsibility for arranging positive incentives to ensure that individuals utilize this potentially effective means of self-control. In a comprehensive treatment program this practice would, of course, be used in conjunction with other methods of self-control, as well as procedures designed to reduce the instigation to engage in the deviant behavior.

When some persons who have undergone

aversive treatment later revert to their deviant activities these outcomes are often attributed to deficiencies inherent in the conditioning procedure itself. Faulty timing and sequencing of stimulus events, selection of inadequate aversive agents, and conditionability deficits are typically invoked as explanatory factors. Similarly, recommendations for enhancing the efficacy of this method single out conditioning variables. These include the use of intermittent schedules of reinforcement, continuation of the trials for a sufficient period to ensure overlearning, and inclusion of booster treatments at periodic intervals after the formal program has been discontinued (Eysenck, 1963). There exists suggestive evidence (Voegtlin, Lemere, Broz, & O'Hollaren, 1942) that conditioned aversion and avoidance can be successfully maintained through periodic reconditioning trials. Portable devices

that permit self-administration of aversive stimuli and the judicious use of symbolically generated consequences would undoubtedly also reduce the disposition to engage in deviant behavior. However, there is little reason to expect that intermittent reinforcement would increase the durability of aversive reactions. Partial reinforcement retards the rate of extinction by reducing discriminability of the occasions when customary consequences will or will not occur (Spence, 1966). Administration of reinforcements in an unpredictable manner may produce stable conditioned responses during treatment, but the conditions of reinforcement prevailing in treatment situations and in everyday life differ markedly and are easily distinguishable. The situational change would ordinarily result in a rapid decrement in responsiveness unless cognitive functions were utilized in a self-

reinforcing system that could endure long after conditioning influences were discontinued.

Induced aversions are generally less durable than approach behavior that has been restored by eliminating inhibitions and anxieties. This differential reversion rate is most likely attributable to the different maintaining contingencies associated with these two forms of behavior. In the case of behavioral conditions involving fear, removal of avoidance responses enables people to engage in many potentially rewarding activities which, in turn, further strengthen the newly established behavior. Initial behavioral changes are thus apt to set in motion a positive reciprocal influence process. By contrast, sexual, appetitive, and addictive behavior produce powerful immediate reinforcement, whereas any aversive consequences that do occur are typically long delayed. These types of controlling conditions



result in behavior that is not only refractory to change but also easily reinstatable because of the positive reinforcing effects that accompany its recurrence. Aversion treatments attempt to forestall the recurrence of deviant behavior by developing immediate aversive reactions to the stimuli that typically evoke the behavior.

The major value of aversion procedures is that they provide a means of achieving control over injurious behavior for a period of time during which alternative, and more rewarding, modes of response can be established and strengthened. Used by itself, this method may bring about only temporary suppression of deviant tendencies. The answer to the reduction of reversion rates, therefore, lies in the scope of the treatment program employed rather than in variables operating within the conditioning paradigm. This issue will be discussed more fully in the context of

the modification of specific behavior disorders.

### *STIMULUS EVENTS IN AVERSION TREATMENTS*

The consequences of selecting inappropriate stimulus events for aversion treatment are considerably more serious than those for desensitization approaches. In the latter case, deconditioning an irrelevant stimulus merely prolongs treatment, whereas the former procedures can establish needless aversions and avoidant behaviors. Although the risks associated with aversive counterconditioning may be greater, in the types of behavior disorders that are customarily treated by these methods the rewarding objects are easily identified (e.g., alcoholic beverages, specific drugs, fetishistic objects, cross-sex apparel, homoerotic stimuli). The major decisions, therefore, concern the variety of conditioned stimuli and the forms in

which they will be presented.

If inadequately applied, aversive procedures can have generalized inhibitory effects. Control of generalization is therefore an important issue. A change agent is faced with the task of presenting aversive stimuli sufficiently intense to arouse strong aversion, while simultaneously confining generalization to a particular class of activities. To achieve this dual objective, the stimulus events must be distinctive and carefully delimited. Applications of aversion therapy to the modification of homosexuality will serve to illustrate the latter point. Typically, pictures of nude, semi-nude, and fully clothed males are contiguously associated with unpleasant experiences. In these instances, aversions are established to a general stimulus class so that some undesired generalization may occur, but the most relevant stimulus events (i.e., specific

homosexual practices) are not included in the conditioning process. Hence, there is no assurance that the negative conditioning will necessarily transfer extensively from pictures of men to specific homosexual responses toward them. Clearly, stronger but circumscribed transfer would be achieved if the stimulus presentations contained all aspects of homosexuality that the treatment is designed to eliminate.

The problem of negative transfer can be even more complicated in cases where the existing behavior is entirely satisfactory, but the evoking stimuli are so bizarre and disturbing to others that attempts are made to nullify their arousal capabilities through aversive procedures. This situation arises most frequently in the treatment of heterosexual fetishists and transvestites who, in order to obtain an erection and to engage in sexual intercourse, must wear their wives' clothing

(Blakemore et al., 1963), rubberized mackintoshes (Oswald, 1962), be kicked with rubber boots or high-heeled shoes (Marks, Rachman, & Gelder, 1965). Such unique modes of erotic arousal create serious marital conflicts, even conditioning revulsions in sexual partners. A similar problem exists when efforts are made to negate the sex-arousing value of self-flagellating, fetishistic, and sadistic fantasies that arouse masturbatory or heterosexual behavior without suppressing the behavior itself. It is of considerable import that in many of the published cases more appropriate sexual fantasies emerge as the arousal potential of bizarre elicitors is eliminated, and desirable sexual behavior is either maintained at its original level or further enhanced (Blakemore et al., 1963; Cooper, 1963; Kushner & Sandler, 1966; Marks & Gelder, 1967; McGuire & Vallance, 1964; Oswald, 1962; Raymond, 1956).

The direction and extent of generalization of aversion effects can be regulated through a program of differential reinforcement in which undesirable events are repeatedly associated with negative experiences, while the desired ones are paired with either rewarding or no adverse consequences. Verbal labeling can also be utilized effectively both to delimit what is being negatively conditioned and to enhance the most relevant elements in the stimulus complex. To continue with the above example, pictorial stimuli could be supplemented with descriptions of the client, recorded in his voice, engaging in anal and interfemoral intercourse, oral-genital relations, mutual manual masturbation, and other forms of erotic responsiveness to males.

It seems reasonable to expect that, as in the case of desensitization, the more inclusive the representation of relevant stimuli in the aversion

program, and the more similar they are to real-life events, the more potent will be the counterconditioning outcomes. This practice is generally followed in the treatment of fetishism, transvestism, and the various addictions because, in each of these disorders, the attractive stimuli can be easily included in the treatment procedures. To further enhance the visual stimuli, tape recordings are sometimes played in which clients describe themselves engaging in the deviant behavior, or they are instructed to develop mental imagery involving the undesired activities. In aversion treatment of compulsive gambling behavior, Barker & Miller (1966) and Goorney (1968) employed newspaper items, sound broadcasts, televised presentations, and actual gambling devices that ordinarily served as the evocative stimuli.

There is some evidence based on the

modification of alcoholism (Lemere & Voegtlin, 1940; Quinn & Henbest, 1967) and sexual deviations (Marks & Gelder, 1967) that when a single stimulus is employed in aversive counterconditioning, the resultant aversion reactions may be highly specific to that particular stimulus class. Consequently, a wide sampling of stimuli is employed when, as in the treatment of alcoholism, a generalized aversion is required.

## **Sexual Deviance**

There exists considerable cross-cultural evidence (Ford & Beach, 1951) that in societies in which homosexuality and transvestism are socially disapproved, sexual inversions rarely occur; by contrast, cross-sex dressing, anal intercourse, oral-genital contacts, and mutual masturbation are regularly practiced by most members of societies in which such behavior is



fully sanctioned and positively reinforced. Whereas in our own society inflicting pain on a sexual partner is regarded as a sadistic perversion, in other cultures pain cues, resulting from aggression that normally accompanies coital activities, serve as powerful sexual reinforcers (Holmberg, 1946; Malinowski, 1929). There are also wide cultural variations in the physical attributes and adornments that become culturally conditioned sexual stimuli. What has been endowed with erotic arousal properties in one society—corpulence, skinniness, upright hemispherical breasts or long pendulous ones, shiny white teeth or black pointed ones, deformed ears, nose, or lips, broad pelvis and wide hips or narrow pelvis and slim hips, light or dark skin color—may be neutral or highly repulsive to members of another social group. These cross-cultural data showing the range of preferred

sexual reinforcers are striking testimony of the influential role of social learning in the development of sexual behavior that may be judged deviant by some social group.

Although our society imposes severe social and legal prohibitions against some forms of behavior that are believed to have sexual implications, certain members may nevertheless experience unusual reinforcement and modeling influences serving to promote and to maintain deviant sexual behavior. A major obstacle to the understanding of human sexual deviance is that, for ethical reasons, experimentation designed to identify the conditions governing sexual phenomena cannot be conducted. Consequently, the search for the relevant controlling variables must rely on naturalistic studies. A number of clinical reports have been published containing data that illustrate the social learning processes whereby culturally

inappropriate stimuli and responses acquire unusually strong sexual reinforcing properties.

Litin, Giffin, & Johnson (1956) describe the development of transvestism in a young boy who continually dressed up in his mother's clothes, including cosmetics and jewelry, exhibited almost complete feminine-role behavior, and even adopted a girl's name which his mother suggested. Cross-sex dressing first appeared following an episode in which the mother, in response to her son's comment that she looked pretty in her new shoes, hugged him and offered him her old shoes. He wore these shoes daily, eliciting considerable maternal approbation. The mother continued to encourage and reward sex-inappropriate behavior with demonstrations of affection and approval, while the grandmother and neighbors supplemented the mother's training in transvestism by supplying the boy with generous

quantities of old shoes, hats, purses, bridal veils, and other female apparel. When the boy's inverted behavior met with disapproval from other persons, the mother attempted some discrimination training by informing her son, "You must never dress like that in front of company, only in front of the family." In a study of the mothers and wives of 32 transvestites, Stoller (1967) found that the subjects were initiated into transvestism by being dressed in girls' clothing or highly rewarded whenever they dressed themselves in feminine apparel. The transvestite behavior was further elaborated by mothers and wives who devoted many hours to teaching the subjects how to dress in feminine clothing, how to apply cosmetics, and how to behave as women.

Litin, Giffin, & Johnson (1956) depict how a mother actively conditioned voyeuristic behavior in her son by sleeping with him, and by being

physically and verbally seductive while appearing nude before him. When the boy was six years old, the mother had shown him her vagina a number of times, but she later discontinued her physically seductive behavior after the son suggested that they engage in sexual intercourse. The boy's strongly established voyeuristic behavior had generalized to the maid and other persons; eventually he was apprehended by the police while peeping from a ladder into neighborhood bedrooms.

Generalization of strongly reinforced homoerotic responses is illustrated in the case of a 16-year-old girl whose mother would lie in bed with her, encouraging mutual stroking of the breasts, and other erotic play. The mother sought psychiatric advice when she became jealous of her daughter's homosexual attachment to a teacher. Homosexual patterns of behavior are not always

fostered in such a blatant fashion. In many instances, the father serves as an inadequate model for masculine behavior and the distribution of social power within the family constellation promotes cross-sex modeling (Whitener & Nikelly, 1964). Sex-appropriate behavior is nonrewarded and, when the parents encourage peer relationships, homosexual associates tend to be favored (Fleck, 1960; Kolb & Johnson, 1955).

A mother's active reinforcement of deviant sexual behavior is again evident in a 17-year-old exhibitionist described by Giffin, Johnson, & Litin (1954). The mother often showered with her son, engaged in endless sex discussions, enjoyed exhibiting herself to him, and delighted at looking at the boy's nude body, particularly his "beautiful masculine endowment." A dress fetish was similarly conditioned in a ten-year-old boy by a mother who responded demonstratively

whenever the son stroked her dress or complimented women on their attire (Johnson, 1953).

That erotic experiences can endow formerly neutral stimuli with sexual arousal properties is supported by results of an interesting study by Rachman (1966), designed to create a mild fetish under laboratory conditions. After a photograph of women's boots was repeatedly associated with slides of sexually stimulating nude females, subjects exhibited sexual arousal (as measured by penile volume changes) to the boots alone, and generalized the conditioned sexual responses to other types of black shoes. In accord with these findings, McGuire, Carlisle, & Young (1965) report that deviant sexuality often develops through masturbatory conditioning in which aberrant sexual fantasies are endowed with strong erotic value through repeated association with

pleasurable experiences from masturbation. The details of their interpretive scheme, and its therapeutic implications, are discussed more fully later.

The foregoing cases represent a small sample of those documented in the reports to which reference has been made. Three social learning variables emerge from these naturalistic studies as important determinants of deviant sexual behavior. The first consideration involves the degree to which parents themselves model homosexual, transvestite, fetishistic, or exhibitionistic behavioral patterns in either blatant or attenuated forms. Second, once the responses are elicited, either by direct instigation or modeling, they are endowed with exaggerated sexual significance and strong positive valence. This may derive from repeated association with relatively intense, affectionate demonstrativeness,



with close physical intimacy, or from masturbatory conditioning. Indeed, for many of the children, inappropriate cues and responses had acquired strong positive valence, and in some cases had resulted in well-developed patterns of sexual behavior long before the onset of pubescence. Third, parents tend to maintain children's deviant sexual responses on an instrumental basis over a long period, both through direct and vicarious reinforcement.

Sexual responses that have acquired strong positive valence can also become self-reinforcing through their stress-reducing capabilities. The diminution of aversive emotional states by engaging in sexual behavior may reflect the operation of two somewhat different psychological processes. First, sexual activities can produce sufficiently intense pleasurable experiences to contravene feelings of

apprehension or frustration. Secondly, performance of sexual behavior also changes the stimulus situation by temporarily directing the person's attention away from stress-provoking events. This attentional shift may in itself produce substantial anxiety relief.

Evidence of the stress-reducing function of deviant sexual responses is disclosed in a report published by Cooper (1963). The client characteristically experienced heightened sexual arousal in response to tactual sensations from silken garments. Dressed in women's clothing, he would frequently masturbate to the point of orgasm by straddling a chair. Although initially the transvestite behavior served a sexual function, it later acquired, through an accidental contingency, generalized anxiety-terminating value. One day while experiencing considerable apprehension regarding a scholastic examination, the client

discovered that cross-sex dressing resulted in an abrupt diminution in anxiety. Thereafter, a wide range of stressful situations elicited transvestite behavior. Several other authors (Bond & Hutchison, 1964; Conn, 1954) have noted a similar behavioral sequence in which mounting tension is abruptly reduced by the execution of deviant sexual responses. These observational data would seem to indicate that deviant sexual behavior of an unusually persistent character is probably maintained not only by sexual reinforcement but also by its tension-reducing effects.

In applications of aversive counterconditioning to sexual disorders, attempts are made to reverse the sexual arousal value of appropriate and inappropriate stimuli through differential conditioning procedures.

*EFFICACY OF CONDITIONED AVERSION  
APPROACHES WITH SEXUAL DISORDERS*

There have been no controlled studies of the relative efficacy of aversion treatments for modifying deviant sexual behavior, but numerous case studies are available which have some evidential value. These reported outcomes, while very interesting, must be accepted with reservation for several reasons. Many of the treatment programs involve a combination of methods, which makes it difficult to assess the relative contribution of the aversion procedures. Moreover, changes in sexual response patterns are typically measured in terms of clients' self-reports, although substantiating information is obtained from spouses and close associates whenever possible.

Several objective tests of sexual arousal have been developed which are beginning to be employed to measure progress during treatment, the degree of alteration in sexual arousal patterns

at the completion of therapy, and their stability over time. One of the laboratory procedures, originally devised by Freund (1963; Freund, Sedlacek, & Knob, 1965), measures, by means of a transducer, penile volume changes in response to pictures of males and females of varying ages, or to other erotic objects. Several validation studies (Freund, 1967a, b; McConaghy, 1967) have shown that this measure can successfully differentiate between persons with homo- or hetero-erotic preferences for adults, adolescents, and children.

Another quantitative index of the attraction value of visual stimuli is provided in terms of changes in pupillary size. In this technique (Hess, 1968) a subject's eye is filmed at the rate of two frames per second while he views test items alternated with control patterns equated for brightness. The film is later magnified and the diameter of the pupil size is measured manually

frame by frame or electronically with photocells. It has been shown that pupillary dilation occurs in response to stimuli that have high interest value, whereas negatively valenced stimuli produced pupillary constriction. Findings of a pilot study (Hess, Seltzer, & Shlien, 1965), in which pupillary responses of homosexuals and heterosexuals were measured to pictures of males and females, verify that this procedure can differentiate sexual preferences with considerable accuracy. All heterosexuals displayed larger responses to pictures of women than to pictures of men, whereas homosexuals showed the reverse pattern. The authors suggest that standard sets of pictorial stimuli could be devised to provide reliable measures of sexual attraction. However, aversive conditioning may be difficult to evaluate through pupillometric measures because pupillary responses could represent either sexual interest

or anxiety arousal conditioned to sexual stimuli. This interpretive problem does not arise with respect to erectile responses.

Although it is customary to question the value of case studies, because sexual deviations are exceedingly resistant to change, favorable results cannot be casually dismissed. Deviant sexual patterns rarely change “spontaneously,” and they have proved equally unresponsive to the planned efforts of psychotherapists employing varied strategies (Curran & Parr, 1957; Woodward, 1958). The fact that most persons receiving aversion therapy have undergone traditional forms of treatment for extended periods of time without any degree of success makes it unlikely that the behavioral modifications accompanying aversive counterconditioning are attributable to interpersonal and cognitive variables that are prominent in conversational therapies. The nature

and brevity of the treatment further limit the opportunity for social factors to exert a strong influence on the outcomes.

The individual case method can be effectively employed to assess the functional relationship between treatment variables and behavioral changes. It was previously shown how intrasubject replication furnishes a means of evaluating the role of reinforcement variables in behavioral processes. In their detailed measurement of changes accompanying aversive counterconditioning, Marks & Gelder (1967; Gelder & Marks, 1969) provide an excellent model that other researchers would do well to emulate. A large number of transvestites and fetishists received aversion treatment in which shocks were administered while they carried out their deviant behavior or imagined themselves performing the same activities. In each case, the process of



treatment was studied by recording changes in sexual arousal through the use of a penis transducer. The clients' attitudes to the objects of their deviation, to sexual intercourse, to themselves, and to the therapist were also measured by the evaluative scales of the semantic differential. In addition, progressive changes in the latency of sexual images and accompanying erectile responses were recorded. Different aspects of the clients' deviant behavior were modified one at a time to determine whether the observed changes reflected the operation of general factors present in any treatment or the specific counterconditioning procedures.

Figure 8-1 depicts changes during the course of aversion therapy in both the frequency and latency of erectile responses of a transvestite to different feminine garments that he regularly used in cross-dressing. At the beginning of treatment he

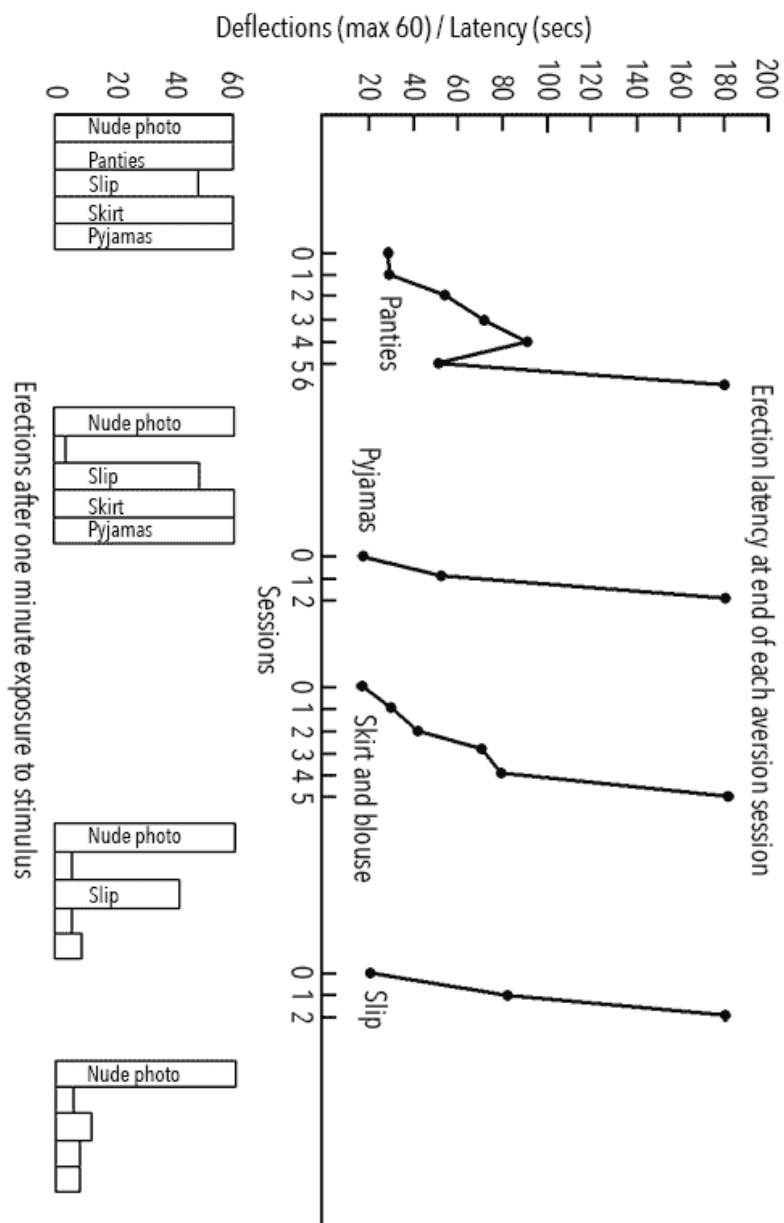


Figure 8-1. Changes in the frequency and latency of erectile responses of a transvestite to different feminine garments as they were included serially in aversive counterconditioning. Marks & Gelder, 1967.

was highly aroused sexually by all of the items. The aversive procedures were then applied to one garment at a time beginning with panties. After approximately 20 trials the client no longer showed any erectile responses to panties, but he responded with undiminished sexual excitement to the remaining articles of clothing. As the other items were serially counterconditioned they also lost their sex- arousing capacity. It is important to note, however, that the client maintained high sexual responsiveness to appropriate heterosexual stimuli after deviant sources of sexual arousal were eliminated. The specific sequence of behavioral changes obtained by repeated application of aversive stimulation provides convincing demonstrations that the alteration in sexual arousal was indeed produced by the conditioning procedure. In the cases studied, sexual reconditioning was followed by

corresponding elimination of deviant sexual desires and activities.

The findings of the above study not only attest to the efficacy of aversive conditioning, but they also help to clarify the stimulus function of symbolic processes and their modification. Prior to treatment, imagery of the deviant behavior elicited strong erectile responses. As these fantasies were repeatedly associated with unpleasant experiences the latency of the images increased until eventually they could be produced only with considerable difficulty (Figure 8-1). Moreover, the erections which originally accompanied the fantasies diminished gradually with successive trials and eventually disappeared even when the images could be produced. The selective effect of the treatment is again shown in the fact that clients were able to conjure up arousing heterosexual imagery with ease.

The pattern of attitudinal change corresponded closely to the modifications achieved in sexual arousal. Sexually attractive garments were selectively devalued as the specific objects were negatively conditioned, whereas self-attitudes, and general attitudes toward sexual intercourse and toward therapists, changed little during treatment. The consistent selective changes achieved in erectile responses, in the arousal properties of deviant fantasies, in attitudes, and in overt sexual behavior, would indicate that in cases where aversive conditioning is adequately applied the outcomes are at least partly attributable to the conditioning experiences.

Findings of controlled individual studies by Barlow, Leitenberg, & Agras (1969), in which a pedophile and a homosexual were treated with symbolic aversion in a replicative design, lend further support to the contribution of contiguous

experiences to observed changes. The clients' autonomic and evaluative responses to deviant sexual stimuli and the frequency of their sexual urges were measured during periods when sexually arousing imagery was successively paired with verbally induced nausea or occurred alone. Deviant sexual arousal declined sharply during the aversive conditioning phase, it gradually increased when sexually arousing scenes were repeatedly presented without any aversive experiences, and it was virtually eliminated after the aversive contingency was reinstated.

Aversion therapy has produced many marked and enduring changes in transvestism (Blakemore et al., 1963; Cooper, 1963; Glynn & Harper, 1961; Lavin et al., 1961; Marks & Gelder, 1967; Morgenstern, Pearce, & Rees, 1965); in fetishism (Kushner & Sandler, 1966; Marks, Rachman, & Gelder, 1965; McGuire & Vallance, 1964; Oswald,

1962; Raymond, 1956; Raymond & O’Keeffe, 1965; Thorpe, Schmidt, Brown, & Castell, 1964); in exhibitionism (Evans, 1967; Kushner & Sandler, 1966); and in homosexuality (Costello, 1963; Freund, 1960; James, 1962; Max, 1935; Miller, 1963; Thorpe et al., 1964). In other cases involving similar disorders, aversion therapy effected temporary cessations or reductions in deviant sexual behavior (Clark, 1963a, b; Freund, 1960; Oswald, 1962; Thorpe, Schmidt, & Castell, 1963). Still other clients have derived little benefit from this mode of treatment (Freund, 1960; Solyom & Miller, 1965).

It is difficult to identify the factors responsible for the differential efficacy of aversion methods because the cases involve variations in motivation for change, in aversive stimuli, in the extent to which heterosexual attractions are established, in length of follow-up, in degree and duration of

homosexual behavior, and in the extent to which favorable conditions for heterosexual activities exist within the environment. The influential role of some of these factors is revealed in studies containing a sufficient number of cases to compare outcome rates. Freund (1960), for example, found that for homosexuals who were self-referred, aversion therapy produced enduring heterosexual orientations in approximately 45 percent of the cases, and 16 percent adopted predominantly heterosexual patterns for at least some period of time. By contrast, only 6 percent of those who were coerced into treatment by legal authorities and relatives became exclusively heterosexual. These data, in accord with the self-arousal interpretation of counterconditioning presented earlier, show how motivational factors may counteract the effects that customarily result from aversive stimulus pairing. Reluctant individuals



can impede the development of aversions by failing to attend to the attractive stimuli and to produce accompanying imagery. They can give fake signals at crucial points in the procedure where the therapist usually depends upon guidance from the client. They could even reverse the direction of counterconditioning by conjuring up heterosexual imagery while undergoing unpleasant stimulation. Finally, if aversion reactions were established, they could be easily extinguished by clients' repeatedly engaging in homosexual activities. Whatever the reasons might be, the differential outcomes associated with the desire to modify one's sexual orientation reaffirm the view that unless individuals are committed to the selected objectives, their behavior is likely to nullify the effects of change programs.

McGuire, Carlisle, & Young (1965) advance the

interesting thesis that in some cases deviant sexual preferences are developed through masturbatory conditioning. According to the authors, three factors usually figure prominently in this form of sexual learning. First, as a result of unpleasant heterosexual experiences or feelings of physical and social inadequacy, the person comes to believe that he cannot achieve a normal sex life. Second, the person usually has a sexual experience that is not sufficient by itself to establish deviant erotic preferences, but it stimulates a fantasy for later masturbation. The major conditioning is assumed to occur in relation to symbolic representations. As the person repeatedly masturbates to the fantasy as his exclusive sexual outlet, the pleasurable experiences from masturbation endow the deviant fantasy with increasing erotic value. This is essentially the same mechanism through which Rachman (1966)

conditioned sexual excitement to shoes except that instead of seductive photographs, the arousing events are more powerful orgasmic experiences.

The authors document their thesis with extensive case data obtained from a large number of sexual deviants. In one of these cases, for example, a 17-year-old male was highly sexually stimulated at seeing a girl dressed only in her underwear. Thereafter, he frequently masturbated to the mental imagery of the scantily clad girl. Eventually the memory of the girl's characteristics faded, but advertisements and shop-window displays of women's undergarments continued to serve as strong masturbatory fantasies. After a period of several years the erotic potential of these fetishistic objects had increased to the point where he no longer showed interest in girls, but rather derived his sexual stimulation almost

entirely from women's underwear which he bought or stole. This helps to explain how outlandish fantasies can acquire powerful sexual valence through contiguous association with masturbatory experiences (Marks, Rachman, & Gelder, 1965; Mees, 1966) and, once established, why they are so refractory to extinction. Other case reports by McGuire and his associates depict a similar process in which aberrant sexual fantasies are selectively reinforced; they eventually become able to provoke corresponding homosexual, exhibitionistic, and voyeuristic behavior. The prevalence of masturbatory conditioning in aberrant sexuality is further shown by Evans (1968), who found that among a large group of sexual deviates 79 percent used deviant fantasy while masturbating.

In instances where erotic fantasies serve as evocative stimuli for deviant sexual activities,

control over the behavior may be achieved by eliminating either the aberrant fantasies or their arousal properties. Evans (1967) reports surprisingly high success in the treatment of seven exhibitionists by aversive conditioning of imaginal stimulus events. In this procedure, clients are presented with image-producing phrases that depict either normal heterosexual behavior or exhibitionistic activities. Vivid imagery of the deviant behavior is associated with shock, which the client can terminate by changing to a slide describing normal sexual responses. Of the seven exhibitionists who finished treatment, five no longer experience any urge to expose themselves and have completely ceased exhibitionistic behavior, while the remaining two have reduced their frequency of genital exposure from a pre-therapy high of 28 per month to 2 episodes per month. In a subsequent study Evans (1968) found

that the speed of aversive conditioning was related to the content of masturbatory fantasies. Exhibitionists who utilized normal masturbatory fantasies discontinued exposure behavior within about 4 weeks of treatment, whereas those who engaged in exhibitionistic masturbatory fantasies required approximately 24 weeks before they ceased the deviant activities. Results obtained by Mees (1966) in modifying a sadistic fantasy suggest that aberrant erotic fantasies of long standing can be most effectively eliminated if, in addition to aversive conditioning, normal heterosexual imagery is induced and reinforced.

#### *DIFFERENTIAL CONDITIONING OF SEXUAL RESPONSIVENESS*

In many of the cases cited above, therapists have tried not only to create aversions to inappropriate objects, but also to develop attraction to heterosexual stimuli. A variety of

differential conditioning techniques has been employed for this purpose. In one such approach, which is probably minimally effective, homosexuals, in addition to receiving aversive conditioning trials, are shown pictures of nude or scantily clad females several hours after administration of testosterone (Freund, 1960; James, 1962). Gonadal hormones may increase sexual arousal, but they do not determine its quality or direction. Indeed, attempts to treat homosexuals by administrations of large amounts of androgen simply increased their homoerotic desires and behavior (Ford & Beach, 1951; Perloff, 1965). It remains a question, therefore, whether any positive conditioning is achieved by this method.

Masturbatory conditioning has also been employed as a means of increasing the erotic arousal properties of heterosexual stimuli. As part

of an aversion-relief method, Thorpe, Schmidt, Brown, & Castell (1964) had clients masturbate to photographs of attractive females and utilize these images in masturbatory fantasies. In addition, shock stimulation was presented in conjunction with phrases describing deviant sexual practices, whereas descriptions of heterosexual behavior occurred with shock termination. The authors report that heterosexual fantasies of high arousal value can be strongly established in this manner. In an earlier study, Thorpe, Schmidt, & Castell (1963) found that masturbatory conditioning alone did not eliminate homosexual fantasies, but a method combining positive and negative conditioning eventually replaced homoerotic fantasies with heterosexual ones. In the absence of comparative data of the sexual responses of individuals receiving either aversive trials alone or the combined procedure, there is no way of



determining the degree to which the positive component facilitated the change in sexual interest.

A differential conditioning strategy was similarly employed by Davison (1968) in treating a college student whose sexual activities were confined to masturbation evoked by fantasies of inflicting injury on women. The client was instructed initially to utilize the sadistic fantasy to induce sexual arousal but to masturbate while looking at pictures of captivating belles from *Playboy* magazine. After conventional sexual stimuli had acquired sex-arousing value the sadistic fantasy was paired with nauseous imagery and supplanted by normal masturbatory fantasies. Consistent with the interpretation of counterconditioning as partly reflecting self-control processes, the client was later able to reinstate and to eliminate sadistic fantasies at will

through masturbatory conditioning with sadistic or normal erotic fantasies.

In a third approach a differential conditioning procedure is employed in which presentations of pictures of nude males are accompanied by electric shock, while looking at projected pictures of nude females is reinforced by termination of continuous electrical stimulation (Solyom & Miller, 1965). This particular method is predicated on the assumption that stimuli associated with aversion relief will acquire positive properties, it is unclear, however, how pain-relief experiences can endow related stimuli with sex arousal value. Nevertheless, Solyom and Miller found, during treatment of a group of homosexuals, that plethysmograph responses to female pictures became progressively greater, while responses to male pictures remained essentially unchanged. This suggests that the differential conditioning

produced a change from predominantly homosexual to bisexual responsiveness. However, these findings are difficult to interpret because, as the authors themselves acknowledge, their plethysmograph measure does not differentiate between sexual and anxiety arousal. Erotic arousal can be most validly assessed in terms of penile erectile responses as demonstrated by Bancroft, Jones, & Pullan (1966), who measured changes in several object preferences in a pedophile throughout the course of aversion therapy. This measure makes it possible to conduct systematic investigations of the relative efficacy of different conditioning procedures for altering erotic preferences. It also provides an objective criterion for determining the duration of treatment, thus safeguarding against either premature termination, or needless prolongation, of the conditioning sessions.

It should be emphasized here that conditioning of sexual attraction to appropriate objects constitutes only part of a broader treatment objective. Persons who have engaged in deviant sexual practices for a long time must develop not only *heterosexual attraction* but also intricate patterns of *heterosexual behavior*. This may require, among other things, acquisition of new speech patterns, dress styles, courtship behaviors, modes of sexual stimulation that are closely associated with heterosexual coitus, and many other aspects of sex-role behavior. To the extent that such behavioral changes enable persons to engage in rewarding intimate interactions, the resultant positive experiences will exert a powerful influence on the further development of heterosexual feelings and preferences.

*CONDITIONING OF AVERSIONS AND  
REINFORCEMENT OF ALTERNATIVE MODES OF  
BEHAVIOR*

The existence of desirable modes of sexual behavior is probably a major determinant of the durability of changes induced through aversive counterconditioning. Enduring modification of sexual deviance through aversion methods will therefore be governed, not so much by the magnitude of negative properties conditioned to previously attractive stimuli but rather by the availability of alternative means of securing sexual gratification. Because the sexual taboos that prevail in the culture extend to treatment situations as well, it is exceedingly difficult to produce and to reinforce desired patterns of sexual behavior. Consequently, treatment interventions are mainly directed toward reducing the incidence of deviant behavior, but the appearance and continued maintenance of heterosexual responses are left to fortuitous circumstances.

Treatment by aversion methods exclusively

generally achieves favorable outcomes with persons who display bisexual responsiveness or engage in heterosexual intercourse, even though they rely upon fetishistic objects for erotic arousal. On the other hand, aversion treatment alone appears to be much less successful in cases where the deviant behavior constitutes the sole means of obtaining sexual gratification. This differential efficacy is well illustrated by Oswald's (1962) treatment of two rubberized-clothing fetishists. In both cases aversion to rubberized garments was successfully established, but one of the clients subsequently reverted to the deviant behavior.

In the first case, rubberized garments primarily served as arousal stimuli for exclusively heterosexual patterns of behavior. The client was prompted to seek treatment because of marital conflicts arising from his wife's refusal to wear her rubberized mackintosh in bed. The erotic arousal

properties of the fetishistic stimuli were rapidly eliminated through a series of counterconditioning trials, in each of which the client donned a mackintosh while experiencing apomorphine-induced nausea supplemented by a recorded tape suggesting similar reactions. A 21-month post-therapy evaluation is summarized as follows: "He feels quite indifferent to rubberized clothes and finds it hard to believe how he could ever have had this interest in them. His career has prospered extremely well by his own efforts and talents, and his wife confirms that they are normal and happy in their general and sexual life [p. 201]."

The second case, a 32-year-old military recruit, experienced heightened sexual arousal whenever he tied himself up tightly in black shiny rubber. This fetishistic behavior apparently originated in an early experience in which a group of boys seized the client, tied a groundsheet over his head

and masturbated him. "Since then he had made a practice of tying himself up with rubber groundsheets, a rubber hood and ropes. He came for treatment partly because he feared he might encompass his own death, as he had recently had difficulty in releasing himself [p. 201]." Except for one occasion when the client had sexual intercourse at a specialized brothel equipped with rubber strait-jackets, hoods, thongs, and rubber zip suits, masturbation served as his predominant form of sexual behavior. The counterconditioning sessions proceeded along lines similar to the case cited above. Following the administration of apomorphine, the client tied himself up in groundsheets or donned a frogman's suit. In addition, on two successive days he received several injections of testosterone and was furnished with books featuring photographs of females.



It is apparent from follow-up reports that rubberized garments had temporarily lost their erotic value, but the reinstatement of fetishistic behavior would be expected from the limited scope of the treatment, aside from the fact that the deviant behavior was instrumental in eventually gaining the client a military discharge.

He tried out his rubber articles a week after leaving hospital, found they held no interest for him and discarded them. He went out to dances and other social events for the first time in years. After 6 months he relapsed and a further 4 months later made known his deviation to the Service authorities and was invalided. He told me at that time that he intended to live in London where there were others who shared his interests. He had been back to the brothel which, he pointed out, advertises in a well-known week-end publication available at any bookstall, under the guise of a rubber-clothing store. He had formed a friendship with a male homosexual (but not had sexual relations with him), whom he had first noticed wearing a black,

shiny, rubber mackintosh in Hyde Park one fine summer's evening [p. 202].

The conditioning of aversion to inappropriate sexual stimuli can assist in promoting heterosexual behavior provided these alternative responses already exist in the client's repertoire, and sufficient positive reinforcement is available in everyday situations to maintain them. The latter conditions were clearly present in the first case reviewed, but the second client exhibited only a weakly developed heterosexual repertoire, which evidently was further extinguished during the period following treatment when he became more active socially.

The mere absence of heterosexual behavior in itself does not necessarily indicate a behavioral deficit. A person may have developed some capability and desire for culturally approved forms of sexuality, but these tendencies are

strongly inhibited because of heterosexual anxieties. It is therefore important to distinguish between developmental deficits and inhibitory effects in devising supplemental treatment programs to aversion therapy. The inclusion of anxiety extinction procedures is particularly important in modifying deviant sexual behavior that is, in part, maintained by fear of heterosexual involvements. Cooper (1963) reports a case of this type that illustrates the combined use of aversive therapy and self-directed desensitization in the treatment of a 25-year-old pharmacist whose central problems featured transvestism and impotence.

The discussion of the necessity for supplemental programs has dealt thus far with conditions in which heterosexual repertoires are either minimal or strongly inhibited. The scope of the interventions may also need to be extended

when changes in behavior cannot be readily achieved and sustained due to inadequate sexual reinforcement. This problem is revealed in the treatment of a transvestite reported by Glynn & Harper (1961). After a series of aversion trials in which the client experienced apomorphine-induced nausea while attired in women's clothes, he exhibited revulsion at the sight of the female clothing, he no longer felt any desire to wear it, and he declined a request to do so. While aversive counterconditioning successfully eliminated the transvestite behavior, the client's marital relationship provided absolutely no sexual gratifications. Although he had been married for four years, the marriage had never been consummated, due largely to his wife's frigidity. The wife's marked sexual inhibitions were therefore treated by the standard desensitization procedure with considerable success, as evidenced

by the fact that “she is now pregnant and the marriage is happily stabilized.” A seven-month follow-up study disclosed no transvestism nor any desire on the client’s part to engage in cross-sex dressing. Had the treatment in this case been confined to negative conditioning of transvestite responses, it is highly probable that any attempted heterosexual behavior would have been rapidly extinguished and transvestism might have regained its sexually rewarding function.

When deviant sexual behavior is less strongly established, it may be possible to dispense with aversive counterconditioning by substituting a treatment program based on extinction of heterosexual anxieties coupled with positive reinforcement of desired alternative behaviors. Existing sociosexual repertoires can in this way be further developed and strengthened until eventually they become more rewarding than the

deviant tendencies. It will be recalled from clinical studies reviewed earlier (Bond & Hutchison, 1964; Stevenson & Wolpe, 1960) that successful outcomes were, in fact, achieved with exhibitionists and homosexuals treated by desensitization methods alone. These findings suggest the need for systematic comparative studies of the relative efficacy of aversive counterconditioning, desensitization, and reinforcement procedures, utilized singly or in combination, with persons exhibiting varying dispositions for sexually deviant behavior.

### **Modification of Symbolic Activities**

Although aversive counterconditioning has been most extensively employed in the treatment of alcoholism and sexual deviations, a number of investigators have also attempted to eliminate unusually persistent ruminations by this method.

Perturbing fantasies containing sexual, aggressive, and other elements have proved exceedingly refractory to change. Because of their limited accessibility, these types of ideational phenomena are not readily amenable to experimental investigation. As a consequence, the conditions governing the occurrence and persistence of emotionally disturbing thoughts remain obscure. There exists some research evidence (Eriksen & Kuehe, 1956) to suggest, however, that thoughts can be brought under control by applying aversive contingencies. In this particular experiment, students were instructed to produce associations to fifteen words, and their associations to five of these words were followed by shock. Associations that were accompanied by the aversive experience declined rapidly, while the frequency of nonpunished associations remained unchanged over succeeding trials (Figure 8-2). The decrement

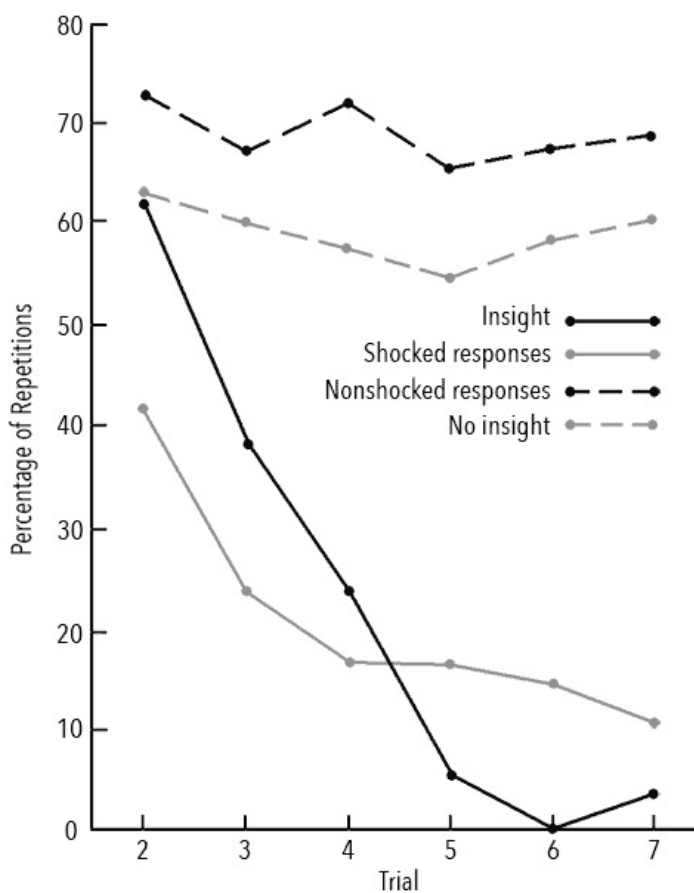


Figure 8-2. Percentage of first-trial responses repeated on succeeding trials as a function of punishment. Eriksen & Kuehe, 1956.



in associations occurred whether or not subjects were aware of the punishment contingency.

It is, of course, easier to eliminate relatively neutral ideations than the highly valenced forms appearing in treatment. Wolpe (1958) reports varying degrees of success in removing obsessional ruminations by associating their occurrence with electric shock. Employing essentially the same procedure, McGuire & Vallance (1964) successfully treated a 29-year-old teacher who was plagued by intrusive thoughts concerning his wife's fidelity, dating back to an ambiguous remark originally made by his mother. Although he realized that these thoughts had no basis in reality, nevertheless this knowledge was of little avail in controlling the obsessional ruminations. In treatment, shocks were contiguously associated with thoughts about his mother making the uncomplimentary remark and

its implications. During the second and third sessions, the client controlled the timing and intensity of shock administration and, thereafter, he continued the conditioning process at home with a portable apparatus. Within a relatively brief time the obsessional ruminations were eliminated, a change that was accompanied by a general diminution of anxiety.

The elimination of disturbing thoughts in the course of aversion therapy is best revealed by Marks, Rachman, & Gelder (1965), who demonstrated that with successive aversive trials the latency of perverted thoughts increased until eventually they could not be produced at all. In the previously reviewed studies involving more extensive measurement of changes Marks & Gelder (1967) found that during reduction of deviant sexual fantasies, erotic arousal accompanying the imagery also diminished

progressively. In approximately half the cases, however, aversive conditioning reduced the arousal potential of deviant sexual fantasies, but it did not eliminate the mental imagery. The reasons for the differential susceptibility to inhibition are not apparent. At this point it is worth noting that aversion therapy provides an excellent opportunity for studying the extent to which thought processes are amenable to reinforcement control. It also furnishes a means of investigating symbolic control of overt behavior.

In a number of studies, strongly established behavior has been enduringly eliminated by aversive conditioning of symbolic events alone. Evans (1968) and Thorpe and his associates (1964), for example, modified sexual disorders by endowing verbal and imaginal representations of the deviant activities with negative qualities through association with shock. Agras (1967) also

successfully applied the symbolic conditioning paradigm to aggressively destructive behavior in a chronic schizophrenic, who had to be physically restrained because of uncontrollable tendencies to smash any glass in sight. The client participated in a series of sessions in which he was asked to visualize himself breaking glass, whereupon he was administered a painful electric shock. As the treatment progressed the latency of the destructive imagery increased and eventually he lost all urge to smash glass. A follow-up study revealed that, except for one minor incident, the destructive behavior never appeared again.

Imaginal counterconditioning may be of greatest value in modifying disorders in which symbolic events possessing high arousal potential exert substantial control over behavior. If the internal elicitors are eliminated the related actions should decrease in frequency. Some investigators

have assumed, however, that symbolic stimuli can be substituted for real events without sacrificing effectiveness. If this assumption were valid, then the method would have wide applicability, since any event, no matter how complex, can be easily visualized. On the basis of generalization principles one would expect actual stimuli to produce better results than imagined ones.

#### *OTHER ADDICTIVE BEHAVIORS*

Another behavioral problem to which aversive forms of treatment have been applied is cigarette addiction. Preliminary case studies report relatively high abstinence rates accompanying treatments in which the act of smoking is contiguously paired with aversive electrical stimulation (McGuire & Vallance, 1964), drug-induced nausea (Raymond, 1964), or a disagreeable mixture of smoke and hot air (Wilde,

1964). These favorable outcomes contrast with those of Koenig & Masters (1965), who compared changes in smoking behavior in groups of students who received either desensitization, aversive counterconditioning, or supportive counseling. Very few of their subjects discontinued the habit, and degree of reduction in smoking was found to be unrelated to the type of treatment administered.

In an experimental study employing appropriate controls, Stollak (1968) had little success in modifying obesity by pairing descriptions of fattening foods with shock stimulation. It would appear from the enduring weight reductions obtained through self-management of contingencies by Harris (1969) and Stuart (1967), that a broad program of self-control can be highly effective, whereas aversive conditioning alone is likely to yield unimpressive

results.

## Alcoholism

A wide variety of “neurotic personality disturbances” have been proposed as the underlying determinants of chronic alcoholism. Among the more widely accepted interpretations are those advanced by psychoanalytic theory, according to which alcoholism derives from latent homosexuality related to fixations on “passive-narcissistic aims.” Oral dependent needs and characterological structures are thus frequently invoked as the decisive predisposing factors in the excessive use of alcohol. Self-destructive drives, feelings of inferiority, unconscious needs to dominate, and a host of other factors including excessive mothering, insufficient mothering, emotional immaturity, and introverted psychoneuroses have also been proposed as

determinants of alcoholism.

In contrast to the widespread claim for a prealcoholic personality, comparative studies of alcoholics and nonalcoholics (Sutherland, Schroeder, & Tordella, 1950; Syme, 1957) have generally failed to identify any specific personality traits or “underlying dynamics” that would clearly differentiate alcoholics from other deviant groups, or for that matter, from persons judged to be “normal.” Even if some consistent personality correlates of alcoholism had been obtained, it would be impossible, without longitudinal studies, to determine whether the given personality patterns represented the cumulative consequences or the causes of chronic intoxication. It is nevertheless evident from a large body of empirical findings and knowledge of behavior maintenance mechanisms that the search for personality dynamics that supposedly control



excessive drinking is a futile pursuit. Just as persons who differ markedly in personality attributes can learn to use tobacco excessively, so, given appropriate social-learning conditions, persons who possess diverse personality characteristics can be taught heavy drinking of alcoholic beverages. In fact, it has been shown repeatedly that no matter what deviant behavior is singled out for study, it is usually found in a wide variety of personality types. A much more fruitful approach to the understanding of alcoholism would be to investigate the learning contingencies specifically associated with drinking behavior and the reinforcement mechanisms maintaining self-intoxication.

#### *EFFECTS OF ALCOHOL ON EMOTIONAL AROUSAL AND REACTIVITY*

Psychodynamic theories have generally emphasized the symbolic value of alcohol in

gratifying “oral” or “passive-dependent” needs, but remarkably little attention has been paid to the pharmacological properties of ethanol which, under certain conditions, make it a powerful positive reinforcer.

One set of experiments that has direct bearing on the reinforcing qualities of ethanol is concerned with its effects on both autonomic arousal and reactivity. In these studies subjects’ physiological responses are measured prior to and following the ingestion of alcohol, with basal conductance level and magnitude of GSR responses to specific stressor stimuli typically serving as indices of emotional responsiveness. The findings generally show that alcohol in small doses has no consistent effects (Docter & Perkins, 1961; McDonnell & Carpenter, 1959), but it can produce substantial reduction in affective arousal when taken in moderate to large quantities (Carpenter, 1957;

Greenberg & Carpenter, 1957). A comparison of alcohol, meprobamate, and a placebo by Lienert & Traxel (1959) further reveals that alcohol and the tranquilizer are equally effective in reducing GSR responses to disturbing verbal stimuli. Moreover, subjects who had exhibited high emotionality, as assessed several weeks prior to the experimental session, were tranquilized by alcohol to a greater degree than those who had previously displayed low arousal.

It is sometimes mistakenly assumed (Chafetz & Demone, 1962) that reinforcement principles cannot adequately account for alcoholism because the devastating social and physical consequences of chronic drinking far outweigh its temporary relief value. This argument overlooks the fact that behavior is more powerfully controlled by its immediate, rather than delayed, consequences, and it is precisely for this reason that persons may

persistently engage in immediately reinforcing, but potentially self-destructive, behavior. Future adverse consequences, reinstated symbolically in the present, may be sufficiently strong to inhibit drinking behavior when instigation for escape is relatively weak. On the other hand, it is unreasonable to expect thoughts of future effects to exert much of an inhibitory influence in persons who experience a high level of aversive stimulation and who present a well-established stress-alcoholism response pattern.

#### *EFFECTS OF ALCOHOL ON AVOIDANCE AND ESCAPE RESPONSES*

Further evidence for the stress-reducing properties of alcohol is provided in experiments with animals designed to study disinhibitory effects and extinction of avoidance responses. Suggestive findings regarding the fear-reducing effects of alcohol were originally reported by

Masserman & Yum (1946) in a study in which cats that had learned to perform complex manipulations to secure food subsequently inhibited the instrumental manipulatory and approach responses after they had been shocked at the goal. Administration of small doses of alcohol, however, promptly restored the approach manipulations designed to obtain the food rewards. In addition, the cats developed a preference for milk cocktails containing 5 percent alcohol to plain milk during the series of shock trials, but reverted to their original preference for nonalcoholic drinks after the aversive stimulation had been discontinued and emotional responses were completely extinguished. In a partial replication of the Masserman and Yum study, Smart (1965) further confirmed the anxiety-mitigating effects of alcohol.

In order to test whether alcohol reduces

punishment-induced avoidance behavior or increases approach tendencies in an approach-avoidance conflict, Conger (1951) designed an experiment in which he trained one group of animals to approach the lighted end of the alley for food, and a second group to avoid the lighted end of the alley to escape electric shocks. Compared to the behavior of sober controls, which had been administered placebo injections, the avoidance responses of subjects that had received alcohol injections showed a substantial reduction in strength, but approach responses seemed unaffected.

A few experiments involving human subjects have also demonstrated the disinhibiting effects of alcohol on verbal expressions of sexual and aggressive behavior in social drinking situations (Bruun, 1959; Clark & Sensibar, 1955). Among humans, however, the same dose of alcohol may

have diverse effects because individuals differ in the types of responses inhibited, the strength of inhibitions, and variations in social conditions which, in part, serve to define and to control appropriate behavior.

Numerous studies have been concerned with the influence of ethanol on escape and avoidance responses tested in a variety of aversive conditioning situations involving no rewarded competing responses. In these experiments animals are initially taught to perform responses which either avert the onset of aversive stimulation or terminate it after its occurrence. Changes in the rate of avoidance and escape responses as a function of the administration of ethanol are then assessed relative to the performances of control groups, which receive either water or solutions containing other types of drugs. Ethanol in moderate doses produces more

rapid extinction of fear-mediated responses (Kaplan, 1956; Pawlowski, Denenberg, & Zarrow, 1961), and it reduces the rate of responses designed to postpone the occurrence of aversive stimuli (Hogans, Moreno, & Brodie, 1961; Sidman, 1955). Moreover, the capacity of alcohol to reduce emotional behavior is similar to that of other drugs possessing central depressant properties (Korpmann & Hughes, 1959).

The withdrawal of positive reinforcers following a period of reward generally produces aversive effects that lead to the suppression of associated responses. Further support for interpreting the behavioral effects of ethanol in terms of emotion-reducing processes is furnished by experiments concerned with the reinstatement of responses following their inhibition through frustrative nonreward. Under these conditions, animals administered ethanol are more persistent



than those given a placebo in performing nonreinforced behavior (Barry, Wagner, & Miller, 1962), and they increase their rate of response in the presence of stimuli signifying nonreward (Blough, 1956; Miller, 1961).

The experimental data reviewed so far, based on the forced administration of moderate doses of ethanol, strongly indicate that alcohol can produce significant decrements in both autonomic arousal and emotional behavior generated by aversive environmental conditions. Investigations concerned with variables governing the voluntary intake of alcohol also contribute to an understanding of the development and maintenance of self-intoxication. This research is reviewed next.

### *DETERMINANTS OF VOLUNTARY ALCOHOL CONSUMPTION*

The self-selection method has been extensively employed in studies designed to identify the stimulus determinants of alcohol consumption. In these investigations animals are typically provided with a choice between an alcoholic solution and one or more other liquids; the base level of voluntary alcohol intake is then compared with the amount consumed under various environmental conditions.

Findings of studies utilizing a forced alcohol regimen, in which the animals' entire liquid intake is restricted over a period of time to solutions containing various concentrations of ethanol, reveal that alcohol per se has no strong inherently reinforcing properties. Under such conditions, animals consume small, nonintoxicating amounts of alcohol, but they readily revert to drinking other liquids when these later become available (Korman & Stephens, 1960; Richter, 1956). The

positive reinforcing value of alcohol, as inferred from increases in alcohol consummatory responses, can be substantially enhanced, however, by certain physiological and psychological conditions. Although animals which metabolize ethanol rapidly consume greater amounts of alcohol in free-choice situations than those who exhibit lower metabolic rates, studies of intraindividual variations reveal that nutritional deficiencies, endocrinal factors such as insulin, and drugs which produce liver damage increase voluntary ethanol intake (Mardones, 1960; Rodgers & McClearn, 1962). However, studies of human alcoholism, though complicated by ambiguities regarding cause and effect, have failed to yield any reliable differences between alcoholics and nonalcoholics in genetic and endocrinological characteristics (Lester, 1966).

Findings of laboratory studies comparing

voluntary intake of alcohol before, during, and after aversive stimulation throw some light on one of the possible mechanisms underlying alcohol consumption. It will be recalled that Masserman & Yum (1946) found that animals who had initially preferred plain milk to an alcoholic milk solution developed a preference for alcohol during periods of shock-induced stress, but reverted to nonalcoholic drinks following termination of aversive stimuli and fear extinction. Clark & Polish (1960) measured the intake of water and a solution of 20 percent alcohol by monkeys before, during, and after avoidance training in which each response briefly postponed the occurrence of electric shocks. Although there was relatively little change in water intake across phases, alcohol consumption increased during, and decreased following, the avoidance conditioning sessions.

The effects of aversive stimulation on alcohol

consumption are apt to be more prolonged when punishment is administered on a noncontingent and unpredictable basis. Casey (1960), for example, studied the relative intake of water and an alcohol solution as a function of aversive shocks programmed according to a variable interval schedule. Under such conditions of uncertainty, the animals drank somewhat larger amounts of alcohol for the period of stress, but the greatest increments in voluntary alcohol consumption occurred during the following month, after the shocks had been discontinued. On the other hand, in a second group of animals provided with a free choice of water or a solution of reserpine (which has long-delayed effects), the same experimental manipulations failed to increase the attraction of the latter drug. These differential findings suggest that the relatively rapid absorption of alcohol, and the attendant

reduction in aversive arousal, may partly contribute to its effectiveness as a positive reinforcer under conditions of aversive stimulation. Moreover, generalized emotionality may further enhance its reinforcing effects (Korn, 1960).

### *SOCIAL LEARNING OF DRINKING BEHAVIOR*

The research discussed above indicates that excessive alcohol consumption is maintained through positive reinforcement deriving from the central depressant and anesthetic properties of alcohol. Persons who are repeatedly subjected to environmental stress are, consequently, more prone to consume anesthetic doses of alcohol than those who experience less stress and for whom, therefore, alcohol has only weak reinforcing value. In many cases, also, excessive drinking may primarily serve to relieve the aversive effects of

boredom.

Prolonged and heavy use of alcoholic beverages produces alterations in the metabolic system which provide the basis for a second maintaining mechanism that is quite independent of the original functional value of alcohol. That is, withdrawal of alcohol elicits exceedingly aversive physiological reactions consisting of tremulousness, nausea, vomiting, marked weakness, diarrhea, fever, hypertension, excessive perspiration, and insomnia (Isbell, Fraser, Wikler, Belleville, & Eiseman, 1955; Mendelson & La Dou, 1964). After the person thus becomes physically dependent on alcohol, he is compelled to consume large quantities of liquor both to alleviate distressing physical reactions and to avoid their recurrence. Since the ingestion of intoxicants promptly terminates physiologically generated aversive stimulation, drinking behavior is

automatically and continuously reinforced. After pharmacological addiction occurs, the major part of the alcoholic's time and resources becomes devoted to maintaining a continuously high level of self-intoxication.

Although aversion reduction and other positive reinforcements which typically accompany social drinking may account adequately for the maintenance of inebriety, an adequate theory of alcoholism must invoke additional social-learning variables since, obviously, most people who are subject to stressful experiences do not become alcoholics. It has been customary to summon internal determinants in the form of neurotic personality disturbances and underlying pathologies as the differentiating antecedent variables. The inadequacy of theories of alcoholism, which emphasize the role of personality traits and



internal dynamics, becomes readily evident in the marked cultural and subcultural differences in the incidence of alcoholism. Indeed, based on the theory that a “neurosis” is instrumental in the development of chronic alcoholism, one would be forced to conclude that Jews, Mormons, Moslems, Italians, Chinese, and members of other cultural groups which present exceedingly low rates of addictive drinking are lacking in neuroses, oral deprivations, self-destructive tendencies, latent homosexuality, indulgent mothering, and inadequacy feelings, whereas the latter pernicious conditions must be highly prevalent among the Irish, who surpass all other ethnic groups in chronic alcoholism (Chafetz & Demone, 1962; McCarthy, 1959; Pittman & Snyder, 1962). Perhaps the most striking evidence that alcoholism primarily represents a learned pattern of behavior, rather than a manifestation of a

particular type of predisposing underlying pathology, is provided by the extraordinarily low rates of alcoholism among Jews, who experience no less, and in all probability more, psychological stress than members of other ethnic groups noted for their drinking (Glad, 1947; Snyder, 1958). These ethnic and subcultural differences in the use of intoxicants point to the importance of the prealcoholic social learning of drinking behavior in the development of alcoholism.

The social-learning variables take several forms. At the most general level they are reflected in the cultural norms that define the reinforcement contingencies associated with the use of alcohol. There is considerable evidence that the consumption of alcohol is significantly influenced by the drinking mores of given social groups. Members of cultures that are highly permissive toward the use of intoxicants, or even

consider drinking to be emulative behavior, display a higher incidence of drunkenness than individuals reared in cultures that, for religious and other reasons, demand sobriety. Similarly, within heterogeneous cultures such as our own, the prevalence of chronic intoxication varies as a function of the types of social-learning conditions that are associated with class status, religious affiliation, racial and ethnic background, occupation, and urban or rural residence.

Although cultural and subgroup mores obviously play an influential role in determining the extent of excessive drinking, normative injunctions alone do not explain either the relatively low incidence of *addictive drinking* in social groups that positively sanction the use of alcoholic beverages, or the occurrence of chronic alcoholism in cultures prohibiting intoxicants.

Cultural and subgroup mores are to a large extent transmitted through the modeling behavior of socializing agents; consequently, one cannot assume that members of a particular class undergo equivalent learning experiences. Studies of the family background of alcoholics generally reveal an unusually high incidence of familial alcoholism (Fort & Porterfield, 1961; Lemere, Voegtlin, Broz, O'Hollaren, & Tupper, 1942b; Wall, 1936). It might be argued that these data support a genetic interpretation of alcoholism, but the *pattern* of drinking behavior being modeled and the range of circumstances in which it occurs are of greater importance than exhibition of some drinking or complete abstinence by family members. For example, in Italian and Jewish households, use of dilute alcoholic beverages, particularly wine, is approved under clearly circumscribed conditions but negatively

sanctioned if consumed in either intoxicating amounts or inappropriate situations. When the use of alcohol is thus restricted primarily to mealtimes or forms an integral part of religious ceremonies and other social and familial practices, alcohol consumption may be brought under sufficiently narrow stimulus control to ensure moderation (Bales, 1946; Glad, 1947; Snyder, 1958). On the other hand, in familial situations where alcohol is consumed extensively in a large variety of circumstances and is a preferred response to monotony or stress, a similar type of drinking pattern is likely to be transmitted to growing offspring. Although drinking behavior is initially most often acquired under nonstress conditions, a habitual social drinker will experience stress reduction on many occasions. Once alcohol consumption is thus intermittently reinforced, it will be readily elicited under

frustrative or aversive conditions. Therefore, alcoholism typically results from habituation after prolonged heavy social drinking acquired within the context of familial alcoholism.

The relationship of stress to alcoholism is perhaps strongest among alcoholics who are members of subcultural groups that negatively sanction the consumption of intoxicating beverages, and whose parents have practiced total abstinence. The social-learning history of alcoholism under these conditions has never been adequately documented, but there is some evidence to suggest that in these cases the drinking pattern is originally acquired under highly stressful conditions and then generalizes to less acute emotional circumstances (Fort & Porterfield, 1961). In addition, outside the family, peer models who drink may play an influential role in transmitting drinking behavior (Skolnik,

1957).

In the foregoing analysis of alcoholism, aversive stimulation and its quick reduction through the depressant action of alcoholic beverages were assigned a central role in the development and maintenance of addictive drinking. It should be emphasized, however, that conflict, boredom, frustration, and other stressful conditions may elicit a wide variety of reactions including aggression, dependency, withdrawal, somatization, regression, apathy, autism, inebriety, or constructive coping behaviors. Persons who exhibit the latter stress response pattern will typically be judged "normal"; in contrast, "neuroses," "deep-seated personality disturbances," and other disease processes are frequently invoked as explanatory factors when persons have acquired one or more of the former patterns of coping behavior. These assumed

pathologies represent essentially pseudo-explanations since the main evidence for their existence is the behavior that they are called on to explain.

From a social-learning point of view, alcoholics are people who have acquired, through differential reinforcement and modeling experiences, alcohol consumption as a widely generalized dominant response to aversive stimulation. Therapeutic attention would therefore be most profitably directed toward reducing the level of aversive stimulation experienced by individuals, and toward eliminating alcohol stress responses either directly or, preferably, by establishing alternative modes of coping behavior. Given more effective and rewarding means of dealing with environmental demands, individuals will have less need to resort to self-anesthetization against everyday experiences.



It is entirely possible that the stress component in alcoholism has been assigned excessive weight largely because investigations involving psychological variables have been essentially confined to aversive conditioning procedures, to the relative neglect of other potentially significant determinants of alcohol consumption. Moreover, although physiological conditions and environmental stress have been shown to increase alcohol intake, the amount consumed seldom exceeds the animals' oxidative capacity. In contrast, Lester (1961) found that animals on a variable interval schedule of *positive reinforcement* maintained a steady and prolonged state of self-intoxication accompanied by signs of overt drunkenness, behavioral impairment, and the development of metabolic tolerance analogous to human alcoholism. Since intermittent food reward can hardly be considered a highly

distressing situation, evidently factors other than stress reduction were primarily responsible for the self-maintained inebriation. The findings from the latter study point to the need for experimental investigations of other psychological variables that may be expected eventually to produce addictive drinking.

Since alcoholism often arises in rewarding social interactions, operant drinking, in which alcohol consumption primarily serves an instrumental rather than a reinforcing function, warrants detailed examination. In this process a person drinks in order to obtain a variety of reward; deriving from social interactions with imbibing companions. Prolonged heavy drinking leads to the development of physiological tolerance and dependence on alcohol which, in turn, necessitates increased alcohol intake. Thus, in advanced stages biochemical, stress-reduction,

and social-reinforcement mechanisms may contribute to the maintenance of addictive drinking.

Regardless of the theory of alcoholism and psychotherapy to which one may subscribe, the elimination or drastic modification of alcoholic behavior is obviously an objective of considerable import. One of the behavioral approaches to this problem has relied on the conditioning of aversive properties to alcoholic beverages. In the following sections the value and limitations of this mode of therapy, and the conditions under which alternative or supplementary procedures are essential for the successful modification of alcoholism, are considered in detail.

### *CONDITIONED-AVERSION THERAPY*

The first systematic application of aversive counterconditioning to the modification of

alcoholism was reported by Kantorovich (1934). Twenty alcoholics participated in 5 to 18 sessions in which cards containing the names of drinks, and actual sight of bottles of vodka, wine, and beer, and the smell and taste of these various alcoholic beverages were successively paired with electric shocks. A control group of 10 alcoholics received hypnotic suggestions and medication. Of the 20 clients in the experimental group, 17 acquired stable aversion reactions to alcohol, and 14 remained totally abstinent when subsequently evaluated at periods ranging from 3 weeks to 20 months. In contrast, all but one of the controls reverted to their customary alcoholic ways within a few days following their discharge from the hospital.

Although Kantorovich's procedure aroused little interest, aversion therapies employing pharmacological agents have been widely applied

to the treatment of alcoholism. Except for minor variations, the conditioning procedures are generally patterned after the methods originally devised by Voegtlin and his associates (Lemere, Voegtlin, Broz, O'Hollaren, & Tupper, 1942a; Voegtlin, 1940) at a sanitarium devoted exclusively to the treatment of alcoholism. The treatment consists essentially of associating the sight, smell, taste, and thought of alcohol with drug-induced nausea in 4 to 7 brief sessions distributed over a period of about ten days.

On the morning preceding the treatment, the client is administered only liquids and a stimulant drug (e.g., benzedrine sulphate) designed to augment the conditioning process. The sessions are conducted in a semi-darkened, soundproof room from which all extraneous auditory, visual, and olfactory stimuli have been excluded. In front of the client's chair is a table containing a varied

array of liquors including bourbon, scotch, gin, brandy, rum, beer, and wine, spotlighted so as to focus attention on the liquors. The client is first given a glass of tepid water containing oral emetine, and immediately thereafter an injection of an emetine-pilocarpine-ephedrine mixture. Emetine is utilized as the aversion-producing agent primarily because its emetic action is more sustained and it does not have the sedative effect of apomorphine.

Just prior to the onset of nausea the client is poured an ounce of straight whiskey and asked to smell it, to sip it, and to taste it thoroughly. This same procedure is repeated several times with whiskey either taken straight or mixed with warm water to afford easy emesis. The rationale for relying on whiskey exclusively in the initial session and at the beginning of each subsequent session is that it produces greater gastric irritation

than beer or wine and therefore serves to facilitate the emetic reaction. Kant (1944) has seriously questioned the wisdom of using the conditioned stimulus in order to enhance the unconditioned response, since this procedure runs a high risk of reinforcing drinking behavior. If 4 to 6 ounces of alcohol are ingested before emesis occurs, large quantities of alcohol are likely to be absorbed. Under these conditions, the immediate reinforcing effects of alcohol may reduce, or even outweigh, the effectiveness of subsequent aversive experiences. Considering the difficulties in precisely timing the onset of emetic responses, this factor may partly account for variations in strength of conditioned aversion developed by different investigators supposedly using the same method. While Voegtlin has taken necessary precautions to avoid alcohol absorption by the client during treatment, it is not clear whether

other therapists have paid as close attention to this important point in the technique.

The procedural changes recommended by Kant (1944, 1945) obviate the alcohol absorption problem without detracting from the efficacy of the treatment. During the first two sessions just prior to and during nausea, the client is asked to look at, smell, and taste the different alcoholic beverages, but then to spit them out. In subsequent sessions, the client is requested to drink some alcohol at the height of nausea. Only during the terminal sessions, when alcohol itself has acquired the capacity to produce rapid emptying of the stomach, is the client encouraged to take several drinks.

It is important to include all varieties and types of alcoholic beverages as conditioned stimuli in order to establish the most stable and generalized



aversion responses. Lemere & Voegtlin (1940), for example, report several cases in which aversion persisted to the class of beverages originally counterconditioned, but the client began to drink intoxicants toward which aversion reactions had never been established. Subsequent treatment involving these beverages produced total abstinence. Quinn & Henbest (1967) report a similar specificity of aversion in most cases in which negative properties were conditioned to whiskey alone. Although beer, wine, and whiskey are used, greatest attention is usually directed toward the particular type of intoxicant that the client most prefers. The conditioning trials are continued until the alcoholic stimuli alone elicit nauseous reactions, and ingestion of the different varieties of liquor produces prompt emesis. At the conclusion of the treatment the client is instructed that he must, in the future, abstain totally from all

alcoholic beverages.

There have been some variations in the conditioning procedure originally developed by Voegtlin. Miller, Dvorak, & Turner (1960) report that excellent aversions to alcohol can be developed by group applications of this method. The authors report that simultaneous presence of several persons undergoing treatment frequently produces contagious emesis, thereby facilitating the negative conditioning process.

Many European therapists have employed a counterconditioning method devised by Feldmann (DeMorsier & Feldmann, 1950), in which apomorphine serves as the UCS, and treatment sessions continue at 2 to 4 hour intervals until complete aversion has been achieved toward all varieties of alcoholic beverages.

The search continues for an unconditioned

stimulus which would have sufficiently strong aversion-producing properties without disagreeable side effects, but which at the same time permitted the administration of counterconditioning methods on an out-patient basis. Miller (1959), for example, reports considerable success in the treatment of alcoholism with hypnotically induced aversion. The client is hypnotized and instructed to reexperience vividly his worst hangover, including the general malaise, headache, nausea, and vomiting. With the onset of nausea and emesis the client is asked to smell and taste alcoholic beverages including whiskey, wine, and beer. In addition to the conditioning trials, the client is also given direct suggestions that, in the future, the taste or smell of alcohol will promptly evoke disagreeable nauseous feelings. Both Miller and Strel'chuk (1957), who has similarly experimented

with verbal induction methods under hypnosis, maintain that hypnotically induced aversion responses are more stable than those produced by emetic drugs, although no comparative data are furnished to support this claim.

### *EFFICACY OF AVERSION THERAPY*

Numerous outcome studies have been reported indicating the rates of abstinence from alcoholic beverages that follow the application of aversive counterconditioning. In evaluating the outcomes of any form of treatment for alcoholism, it is important to bear in mind several qualifications. Precise assessment of a person's alcohol intake would necessitate continuous monitoring of his activities. Since this is obviously both ethically objectionable and impractical, outcomes are typically measured in terms of self-reports of drinking behavior; ratings by persons

who are well acquainted with the client; public records of intoxication; and various indirect indices based on adequacy of social, physical, and occupational functioning (Hill & Blane, 1967).

It has been widely agreed, on the assumption that alcoholics can never resume a controlled and less excessive pattern of drinking, that complete abstinence from alcoholic beverages should be the main objective of any remedial program. Consequently, the efficacy of behavioral approaches is typically evaluated in terms of duration of sobriety achieved among its clients. In recent years several investigators (Davies, 1962; Kendell, 1965) have reported that a small percentage of alcoholics with a long history of addictive drinking have been able to drink in moderation after treatment. If one employed a measure of change in drinking behavior rather than the stringent criterion of total abstinence, the

proportion of cases deriving some benefit from a therapeutic program would be somewhat higher. However, the validity of more refined improvement ratings is open to question, considering that assessment of pretreatment drinking behavior is usually based on retrospective reports rather than on direct measurement of amount and pattern of alcohol consumption. Mello & Mendelson (1965) have developed a sensitive measure of drinking behavior that could be employed to study changes in alcoholic intake. Participants are given free access to an operant conditioning device on which they can work for either alcohol or monetary reinforcement. After performing a certain number of responses a small amount of alcohol is dispensed or money points are recorded on a counter, depending upon which of these reinforcers is selected. This procedure permits

detailed examination of the pattern of alcohol consumption over a specified period.

Although a major purpose of treatment should be to modify the problem behavior for which clients seek help, the efficacy of a given method of treatment can be best evaluated in terms of its total consequences. This is particularly true of chronic alcoholism, which has profound adverse effects on social, marital, occupational, and other areas of functioning. However, in emphasizing the value of measuring multiple outcomes, therapists too often discount the relevance of the abstinence criterion (Hill & Blane, 1967). This reordering of criteria is often accompanied by enumeration of hazardous consequences that can result from cessation of drinking. Assessment of drinking behavior is therefore largely neglected in favor of inferred psychological changes that can make any form of therapy look good even though it has

failed to achieve its intended objective. To safeguard against perpetuation of weak methods on the basis of extraneous criteria, evaluation research should include assessment of drinking behavior, regardless of whatever other outcome criteria one wishes to invoke.

Table 8-1 Abstinence Rates Obtained by Aversion Therapy

Investigator	Number of Cases	Aversive Stimulus	Complete Abstinence (%)	Duration of Follow-up
Edlin, Johnson, Hletko, & Heilbrunn (1945)	63	Emetine	30	3-10 months
Kant (1945)	31	Emetine	80	Unspecified
Lemere & Voegtlin (1950)	4096	Emetine	51	1-10 years
Miller, Dvorak, & Turner (1960)	10	Emetine	80	8 months
Shanahan & Hornick (1946)	24	Emetine	70	9 months
Thimann (1949)	275	Emetine	51	3-7 years



Wallace (1949)	31	Emetine	42	4-17 months
DeMorsier & Feldmann (1950)	150	Apomorphine	46	8-31 months
Mestrallet & Lang (1959)	183	Apomorphine	41	
Ruck (1956)		Apomorphine	50	1.5 years
Kantorovich (1934)	20	Electric shock	82	3 weeks-20 months
Blake (1967)	25	Electric shock	23	12 months
	37	Electric shock with relaxation training	48	12 months
Miller (1959)	24	Verbally induced aversion	83	9 months
Anant (1967)	26	Verbally induced aversion	96	8-15 months
Ashem & Donner (1968)	15	Verbally induced aversion	40	6 months

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Table 8-1 summarizes the percentages of *complete* abstinence obtained by different investigators employing aversive

counterconditioning. The figures in the table generally do not include cases whose drinking status was unknown because they could not be located in subsequent follow-up studies. These methods, of course, are not applied under psychologically sterilized conditions. The conditioning events are socially administered, clients are undoubtedly given some practical suggestions for more constructive means of coping with their life situations, and they are probably socially reinforced for maintaining sobriety. It is also undoubtedly true that by the time alcoholics appear for aversion therapy they have been recipients of considerable wise counsel, impassioned appeals by significant people in their lives, repeated admonitions, rewards, and a variety of remedies, to no avail. Treatment outcomes are frequently attributed to common social influences as though these were

encountered for the first time in the treatment situation.

The reported variability in abstinence rates most likely reflects the differential time intervals at which the various investigators conducted their follow-up evaluations. In general, abstinence rates are extremely high in the period immediately following treatment; the incidence of reversions to drinking is greatest between 6 and 12 months; thereafter abstinence declines gradually with increasing duration. The fact, however, that some variation in outcomes is found even when similar procedures and follow-up intervals are involved, suggests that the differences may also be partly attributable to inadequate implementation of requisite conditioning procedures, differences in sample characteristics, and variations in the extent to which environmental contingencies are unfavorable for maintaining sobriety. The

conspicuous absence of any controlled experimentation in this area makes it impossible to determine the degree to which treatment outcomes may be differentially affected by the nature of the aversive stimulus, the number and distribution of conditioning sessions, clients' resources for alternative modes of response to stress, and environmental contingencies associated with drinking behavior.

The outcome data reported by Voegtlin and his associates merit some discussion since they reflect the most judicious and extensive application of the principle of counterconditioning to the treatment of alcoholism. Except for instances where the therapy was contraindicated for physical reasons (4 percent) and cases who refused to accept treatment after detoxication (5 percent), aversion therapy was offered to all applicants without further selection. Consequently, an extremely wide

age range, varied socioeconomic levels, and practically all occupational groups are represented. Statistical analyses of follow-up data from approximately 3000 cases treated over a period of ten years reveal numerous significant correlates of abstinence (Voegtlin & Broz, 1949). Clients under 25 contributed the lowest rates of sobriety (23 percent), whereas the incidence of abstinence increased with each succeeding age interval. Although occupational status, in itself, did not appear to represent an important source of variance, clients who presented a history of unemployment and frequent job changes proved to be considerably less responsive (21 percent) than those with relatively stable employment histories (71 percent). Similarly, a considerably smaller proportion of charity cases (20 percent) remained abstinent compared to middle class (49 percent) or wealthy (62 percent) participants.

Continued association with drinking companions accounted for a number of reversions to alcoholism. It is not surprising, therefore, that clients who joined abstinence clubs maintained much higher sobriety rates (87 percent) than those who refused to associate with such groups (40 percent).

Of particular interest is the finding that clients' willingness to, and actual participation in, periodic reconditioning sessions during the year immediately following treatment (when most alcoholic reversions occur) significantly increased the probability of continued abstinence (Voegtlin et al., 1942). Of a total number of 155 clients who initially agreed to participate in the post-therapy program, 91 percent remained abstinent during the year of the study, whereas the corresponding figure for 73 clients who refused to volunteer for follow-up sessions was 71 percent. In order to

provide a further comparison group, every fourth case was not offered the opportunity to receive additional conditioning trials following the completion of the basic treatment. The latter control group yielded a 70 percent abstinence rate.

It is difficult to determine from these data the influence of motivation to change per se, since some of the clients who initially volunteered for additional sessions failed to return; conversely, an unspecified number of control cases, who subsequently learned of the program, voluntarily requested and received the supplemental treatment. It is clear from the within-groups analysis, however, that abstinence rates are positively related to the number of supplementary conditioning sessions (Table 8-2). Based on the overall findings of this study, an alcoholic who is favorably disposed toward continued periodic

treatment has an 86 percent chance of remaining abstinent for at least one year.

Table 8-2 Percentage of Abstinence as a Function of the Number of Supplementary Conditioning Sessions

Number of Supplementary Sessions	Number of Cases	Percentage of Abstinence
None	88	74
One	113	80
Two	57	95
Three	20	90
Four or more	7	100

Aversive counterconditioning is thus a simple, brief, economical, and relatively effective method for producing aversion to alcohol for at least a limited period, and for continued total abstinence in approximately 50 percent of the clients. The aversion form of therapy offers the additional advantages of ready acceptance by clients and wide applicability. Contraindications primarily include certain physical disorders such as



gastrointestinal ulceration or hemorrhage, hernia, hepatic cirrhosis, cardiac conditions, and coronary disease. Despite this relatively favorable showing aversion treatment of alcoholism has never been widely accepted, and with the advent of disulfiram, applications of counterconditioning procedures have further declined. Although disulfiram therapy relies upon aversive contingencies for the maintenance of sobriety, as we shall see next, this approach is aimed primarily at suppressing drinking behavior and does not necessarily alter the positive valence of alcoholic beverages.

#### *DISULFIRAM REGIMEN*

In 1948, Hald & Jacobsen reported experiments in which they found that persons who had ingested Antabuse or disulfiram (Tetraethylthiuram disulphide) for a period of

time experienced intensely aversive physiological reactions when they subsequently drank even small amounts of alcohol. The disulfiram-alcohol reactions (Bowman, Simon, Hine, Macklin, Crook, Burbridge, & Hanson, 1951) consist initially of disagreeable warmth or flushing in the face, conjunctiva and tachycardia occurring approximately 5 to 20 minutes after the intake of alcohol, followed during the next 20 to 50 minutes by headache, dyspnea, dizziness, nausea and vomiting, chest pains, physical weakness, pallor, and hangover symptoms. These reactions, which usually persist for 1 to 2 hours, apparently result from the action of disulfiram in blocking the oxidation of alcohol at the stage of acetaldehyde. Because of the slow elimination of the disulfiram substance, a single dose can render a person physiologically sensitized to alcoholic beverages for a relatively long time. Reports of encouraging

results obtained through this method, along with its simplicity, led to the widespread use of Antabuse treatment for alcoholism.

The therapeutic regimen generally proceeds along the following lines: On the first day following detoxication the client is orally administered 1 to 2 grams of disulfiram, and is given progressively diminishing dosages on the next three days. After the primary intolerance for alcohol has been established, the client is then given one or more test trials of alcohol in order to determine the optimum maintenance dosage of Antabuse. The dosage is adjusted individually to the level where the characteristic, unpleasant side effects of the drug are reduced to a minimum, but the dosage is still adequate to produce sufficiently intense reactions to deter further drinking. The reactions to the test doses also serve to impress upon the client the serious physical consequences

of ingesting even small amounts of alcohol while on disulfiram. Following discharge, the client is placed on a maintenance dosage which usually varies from  $\frac{1}{8}$  to  $\frac{1}{2}$  gram tablet of disulfiram taken each day either before breakfast or in the evening (Bowman et al., 1951; Child, Osinski, Bennett, & Davidoff, 1951).

Because of the violent physiological reactions that can be elicited by alcohol when disulfiram is present in the body, the primary intolerance to alcohol and the maintenance dose are generally established during a brief period of hospitalization with the client under careful observation. However, Martensen-Larsen (1953), who has written authoritatively about this mode of therapy, describes a therapeutic regimen that may be conducted on an outpatient basis. The initial dosage of disulfiram, calculated on the basis of 15 milligrams per kilogram of body weight, is

administered to the client during his first consultation visit. After the first treatment, the size of the optimum maintenance dose is regulated during a period of several months in accordance with the individual's response to alcohol test trials and reported side effects.

Considerable statistical data are available related to the efficacy of the disulfiram regimen. In general, the abstinence rates associated with follow-up periods of varying duration are essentially of the same magnitude as those obtained by aversive counterconditioning (Bourne, Alford, & Bowcock, 1966; Bowman et al., 1951; Brown & Knoblock, 1951; Child et al., 1951; Epstein & Guild, 1951; Hoff & McKeown, 1953; Jacobsen, 1950; Shaw, 1951). Despite the voluminous statistical data relating to the counterconditioning and disulfiram approaches, there is a paucity of comparative investigations in

which the relative efficacy of different modes of therapy is systematically assessed within the same experimental design.

The problem of evaluating different treatment approaches is further complicated by the fact that psychotherapists employing traditional interview procedures generally confine their reports to prescriptive statements concerning the proper conduct of therapy or elaborate accounts of psychodynamic processes, but they generally fail to cite objective data regarding the efficacy of this type of psychotherapeutic enterprise. Questionnaire surveys further reveal that psychotherapists are reluctant to treat alcoholics because of their aversive disruptive behavior (Hollingshead, 1956; Robinson & Podnos, 1966). When interview methods are applied, the clinical reports convey the impression that successful outcomes are disappointingly low. Although there

are no adequate data available for estimating precisely the base rates of change in addictive drinking without psychotherapeutic interventions, the average figures quoted are generally on the order of 10 to 15 percent.

Comparative experimental studies of conditioned aversion and disulfiram therapies are particularly essential, because these two approaches have proved to be most efficacious for modifying and controlling chronic drinking behavior. However, unlike counterconditioning methods which involve few risks and contraindications, potentially serious physical effects may result from the use of disulfiram should the client ingest moderate or large amounts of alcohol while on the drug. Apart from the physiological reactions to alcohol, a number of unpleasant side effects of disulfiram have also been noted; these include drowsiness, nausea,

headache, unpleasant taste and body odor, gastrointestinal disturbances, and sometimes decreased sexual potency. These attendant reactions may, in themselves, be sufficiently disturbing to lead clients to terminate medication. There is some evidence, however, that such side effects can be substantially reduced by decreasing the daily maintenance dose (Child et al., 1951; Martensen-Larsen, 1953). The disulfiram treatment regimen is also generally contraindicated for clients suffering from cardiovascular disorders, cirrhosis of the liver, nephritis, diabetes, epilepsy, advanced arteriosclerosis, and in cases of pregnancy.

It is possible that eventually an effective anti-alcohol agent will be discovered that produces few unpleasant side effects. Ferguson (1956), for instance, reports a drug, citrated calcium carbimide (CCC), whose action is similar to that of



disulfiram in inhibiting acetaldehyde metabolism, but which is free of some of its disagreeable features. A preliminary experiment in which different groups of alcoholics were treated with CCC and with disulfiram revealed that fewer subjects in the CCC group discontinued medication of their own accord (Armstrong & Kerr, 1956).

In view of the possible physical manifestations associated with disulfiram and the inconvenience of continuous self-medication, the selection of this mode of therapy over the shorter, safer, and more economical counterconditioning methods would be justified only if the pharmacological approach were shown to yield significantly higher rates of successful outcomes. In a study comparing the relative efficacy of aversive counterconditioning, Antabuse, group hypnotherapy, and milieu therapy, Wallerstein (1957) found that Antabuse was most efficacious according to an aggregate

rating based on degree of abstinence, general social adjustment, "subjective feelings of difference," and changes in "personality structure." Results for the conditioning group, however, are at such marked variance with those achieved by other investigators that the findings of this experiment must be accepted with reservation. Yanushevskii (1959) analyzed the follow-up data on 2000 alcoholics who had received either medication, psychotherapy, hypnosis, apomorphine-counterconditioning, or disulfiram in a Moscow clinic. Conditioned aversion and disulfiram proved superior to the other procedures, but both of these therapeutic approaches produced essentially similar abstinence rates. Since there is no way of determining what selective criteria were employed in assigning cases to the different treatment groups, these results have only

suggestive value. In view of the limited and conflicting findings, any conclusion regarding the relative efficacy of the methods under discussion must be deferred until adequate empirical data become available.

It should be emphasized that modifications in drinking behavior produced by aversive counterconditioning and by anti-alcohol drugs are achieved through entirely different mechanisms. In the case of disulfiram, abstinence is maintained on a chemical basis. As long as the pills are taken regularly, the potent physiological consequences of drinking serve as a powerful deterrent. However, the conditioning of aversive properties to alcoholic beverages is precluded by the relatively long temporal interval between the ingestion of alcohol on the one hand, and the onset of the aversive consequences on the other. Consequently, alcohol retains its positive value

and the client is able to drink within several days after terminating medication. Many alcoholics, in fact, will take disulfiram intermittently and go on drinking sprees during periods when their physiological tolerance for alcohol has been restored. The duration and degree of abstinence is, therefore, contingent on the duration and regularity with which medication is used (Jacobsen, 1950).

The temporal prerequisites for aversive conditioning are also absent from methods in which nauseants are added to alcoholic beverages. Under these conditions a person will refrain from drinking emeticized cocktails but retain his strong attraction to unmedicated alcoholic drinks. In addition to physiologically induced restraints against the use of alcohol, physical prevention methods were also employed as a means of ensuring sobriety in the early history of the

treatment of alcoholism. Persons were given posthypnotic suggestions that they would develop arm paralysis whenever they attempted to drink alcoholic beverages. This mode of therapy not only resulted in a considerable amount of spilt liquor, but also fostered the acquisition of highly ingenious drinking styles.

Unlike the preceding approaches, by creating aversion reactions to the smell, taste, and thought of alcohol, counterconditioning procedures directly reduce the positive value of intoxicants and, therefore, do not require the continuance of externally imposed deterrents to drinking.

#### *MULTIFORM TREATMENT OF ALCOHOLISM*

Aversive counterconditioning alone has proved most successful with alcoholics who have developed their habituation by way of prolonged heavy social drinking, and who possess sufficient

personal resources to derive adequate gratifications from sober behavior (Thimann, 1949; Voegtlin & Broz, 1949). It is sometimes erroneously assumed by critics of treatment programs aimed at the direct modification of drinking behavior that these approaches are based on the premise that alcohol is the sole problem of the alcoholic. Quite to the contrary, they assume that psychological functioning involves a reciprocal influence process in which the characteristics of behavior are important determiners of the way the environment responds to it; as a person changes, so does his environment. Sustained abstinence is therefore largely ensured not by the fact that liquor has been endowed with negative properties, but because elimination of drinking behavior removes the adverse consequences of chronic inebriation and creates new reinforcement contingencies with

respect to a broad range of behavior. The restoration of physical well-being and the positive experiences derived from improved social, marital, and financial functioning can reinforce sobriety and reduce aberrant tendencies. For this reason, “neuroses” and grossly deviant behaviors often disappear after alcoholism has been brought under control (Jellinek, 1962; Thompson & Bielinski, 1953). Evidently, the risks of aversion therapy, even when employed as the sole method of treatment, are minor compared to the hazards of chronic inebriety.

The fact that 40 to 60 percent of the alcoholics who receive aversion therapy eventually resume excessive drinking after a period of abstinence clearly reveals that, in certain cases, this method must be supplemented with, or replaced by, other programs if sobriety is to be maintained. Traditional interpretive therapy is generally

assumed to be best suited for such cases, a belief that persists despite evidence that, of the various treatments available, interview approaches have proved least successful in modifying chronic drinking behavior.

*Development of Behavioral Competencies.* Alcoholics whose drinking behavior has been temporarily controlled are unlikely to remain abstinent for long if they lack the behavioral competencies for securing gratifications while sober. Individuals deficient in educational achievements and satisfying vocational skills and those who have failed, for one reason or another, to acquire interpersonal adroitness will be subjected to considerable negative experiences. As alcohol is increasingly used to provide escape from an unrewarding existence, the alcoholic's initially minimal competencies typically undergo further deterioration, resulting in even greater



aversive experiences and avoidance. Therefore, alcoholics who present behavioral deficits require a treatment program employing modeling and reinforcement procedures designed to establish behavioral competencies. It is assumed that as positively reinforcing behaviors are developed they will compete with, and eventually replace, alcoholic escape and avoidance.

In a pilot project Narrol (1967) employed reinforcement principles to promote vocational activities in chronic, hospitalized alcoholics. A simulated economy was devised in which points earned for performance of work assignments were used to purchase commissary items, clothing, hospital leaves, recreational opportunities, and room and board on wards that varied in the comforts and freedom they provided. All members in this project devoted approximately twice as much time to their work assignments as did

alcoholics for whom the hospital privileges were not made contingent upon work performance. In accord with previous findings, this project demonstrates that a simulated economy will control behavior as long as the contingencies remain in effect. To test the therapeutic efficacy of this type of program, reinforcement practices would need to be applied over a long period of time, and extended to a wide range of behaviors, including drinking behavior under conditions where alcoholic beverages are readily available.

*Modification of Self-Reinforcement Patterns.*

There is a third class of alcoholics who experience a great deal of aversive stimulation, not because of behavioral deficits or unavailability of rewarding resources, but because they impose exceedingly severe performance demands on themselves. Events and accomplishments considered worthy of self-approval by most persons are viewed by

alcoholics who have set themselves high standards for self-reinforcement as marginal or inadequate performances. Consequently, such persons not only deny themselves warranted gratifications but they also engage in a great deal of self-castigation, from which they periodically escape through alcoholic intoxication. The primary objective in the treatment of alcoholics who are escaping from self-generated aversive consequences would involve the lowering of standards for self-reinforcement, rather than the elimination of behavioral deficits.

*Desensitization of Stress-Provoking Situations.*

Under conditions where drinking behavior is strongly controlled by relief from aversive stimulation, a desensitization form of treatment would constitute the method of choice. Kraft and Al-Issa (1967a, b) report success in modifying alcoholism by desensitizing clients to stressful

interpersonal situations that typically provoked them to drink. Although the sample sizes are too small to draw reliable conclusions, Blake (1967) found that alcoholics who received aversion therapy combined with relaxation training were better able to maintain complete abstinence over a one-year period than those who were administered aversive counterconditioning alone. Had relaxation been deliberately employed to neutralize sources of tension and anxiety the differences might have been even more marked.

The discussion thus far has focused on the individual methods best suited for modifying different conditions which may exert control over drinking behavior. In many cases, achievement of stable changes in alcoholism requires a combination of treatment procedures in which people are desensitized to situations they find stressful; they acquire rewarding patterns of

behavior which will become prepotent over alcoholic self-anesthetization; they develop aversions to alcoholic beverages; and they are taught other self-control techniques for forestalling drinking in their natural environment.

*Social-Systems Approach to the Treatment of Widespread Alcoholism.* Counterconditioning, or any other individual treatment approach, is of little value in modifying the drinking behavior of Skid Row alcoholics. The impoverished personal resources of these disadvantaged persons, and the deviant reinforcement contingencies existing within the Skid Row milieu, serve as powerful influences in shaping a more or less irreversible alcoholic destiny (Pittman & Gordon, 1958).

The Skid Row subculture provides social aliens a refuge from an otherwise demoralizing and unrewarding existence, in which few demands are

made of its members, anonymity is respected, failures and deviant tendencies are not condemned, and achievement strivings and other behaviors that are actively reinforced in the larger society are either nonrewarded or disapproved (Jackson & Connor, 1953). Within this milieu, in addition to the low level of aversive control and the adoption of anti-achievement standards, the major positive reinforcements center around drinking behavior. Social prestige is largely contingent on being a good drinking partner and on the ability to get enough to drink without having to resort to gainful employment. Similarly, most interpersonal rewards occur during the mutual sharing of alcohol in drinking cliques or "bottle gangs." These patterns of reinforcement not only promote continuous inebriation, but by attaching negative values to societal norms and demands, they also establish barriers to reentry

into the larger community.

Except for repeated incarceration for public intoxication and conspicuous violation of other legal codes, Skid Row alcoholics receive little or no constructive attention. For the most part, they are left to themselves to control their own behavior according to their own deviant norms. Therefore the rehabilitation of Skid Row alcoholics must involve an extensive resocialization process that can be achieved only in a markedly different environment. If they are to be successful participants in the larger society, alcoholics must acquire, among other things, a new set of incentives and behavioral norms, a wide variety of social competencies, and esteem- and income-producing vocational skills. Social organizations such as Alcoholics Anonymous (1952) may provide some of the learning conditions necessary for the attainment of resocialization objectives,

but these programs fail to reach those who, on the basis of an extended extinction history, have little reason to share the societal values, and who are therefore unlikely to seek rehabilitation voluntarily. Since any radical change in the alcoholic's social activities will inevitably lose him the gratifications associated with the drinking subculture, willingness to undergo relatively extensive behavioral modifications cannot be obtained without the provision of more rewarding alternatives.

To accomplish fundamental changes in the behavior of persons from a deviant subculture, it is necessary to create social systems that provide the necessary conditions for learning new styles of life. Such a system must teach new skills; it must furnish exemplary role models; and it must embody a set of reinforcement contingencies that will counteract deviant activities and promote



more constructive modes of behavior. It is interesting to note, as dramatically illustrated by the Synanon approach to the treatment of drug addiction (Yablonsky, 1965), that these types of social systems often prove most successful when they are developed by persons for their own rehabilitation.

### **Ethical Considerations in Aversion Therapy**

The use of aversive procedures in the modification of human behavior generally meets with either a cool or a hostile reception on the part of professional psychotherapists. In some cases aversive techniques are applied in an ethically objectionable manner that justifies censorious reactions. For example, exceedingly noxious procedures are occasionally employed even though they produce no greater changes than stimuli in much weaker intensities (Campbell,

Sanderson, & Laverty, 1964; Clancy, Vanderhoof, & Campbell, 1967; Hsu, 1965). Oswald (1962) has promulgated an ill-conceived procedure in which clients not only receive massed aversion trials, but are also subjected to disparaging personal remarks played endlessly on a recorded tape. The rationale for these needless personal assaults, some of which are recorded in the therapist's voice, is apparently based on Sargent's (1957) impressions that social conversions are facilitated by intense emotional crises. Considering that the verbalizations were "designed deliberately to disturb the patient emotionally," it is understandable that a number of the clients exhibited suspicious animosity, unplugged tape recorders, and refused to submit themselves to this inexorable ordeal. It should be emphasized that the brainwashing prescription, which is antithetical to practices derived from learning

principles, is better designed to instill marked aversion to therapeutic agents than to stimulus events that evoke deviant behavior in clients.

Many of the applications of counterconditioning based on nauseous drugs employ massed aversion trials in which the procedures are continuously administered at two-hour intervals over a period of several days. Raymond, who originally devised this method, has subsequently questioned the necessity for such a rigorous regimen (Raymond, 1964). Apart from ethical considerations, massed aversive experiences can produce many undesirable side effects that seriously obstruct progress. With repeated administrations of pharmaceuticals, physical tolerance develops and drugs become less effective. Therapists are, therefore, forced to use increasingly larger dosages or less desirable emetic mixtures in order to induce sufficient

emesis (Cooper, 1963). Moreover, persons who are repeatedly subjected to unpleasant experiences without any rewarding respites and opportunities for positive relationships with the therapists administering the aversive procedures are likely to develop resentment, antipathy to the entire treatment situation, and escape behavior. Many clients who have completed a course of aversion therapy may need to return occasionally for supplementary sessions if they find themselves reverting to their formerly deviant activities. One effect of a massive aversive experience is to reinforce strong avoidance of the treatment situation itself on future occasions, even though a limited reconditioning experience might yield highly beneficial results. For these reasons, a substantial amount of positive reinforcement should be incorporated into aversive conditioning procedures.

If the major purpose of aversion experiences is to provide clients with a means of exercising control over harmful behavior, then clients should play an active role in practicing self-control techniques in the presence of progressively stronger evocative stimuli, rather than serving merely as passive recipients of stimulus pairings. Thus, for example, in the treatment of alcoholism, after persons have been taught how to self-induce nauseous feelings, they should be exposed for increasingly longer periods to social and stress situations that involve high instigation to drinking behavior. In this type of program self-control techniques are developed, repeatedly tested, and adequately reinforced.

The fact that some applications of aversive procedures contain objectionable features does not warrant a blanket indictment of the responsible use of aversion therapy (Allchin,

1964; Matthews, 1964) under special circumstances demanding a more drastic form of therapeutic intervention, any more than one would be justified in condemning the use of surgical and dental procedures with patients willing to undergo a brief painful experience in order to alleviate more deleterious and long-lasting suffering. The brief discomfort occasioned by a program of aversion therapy is minor compared to the repeated incarceration, social ostracism, serious disruption of family life, and self-condemnation resulting from uncontrollable injurious behavior. It is a therapist's responsibility to provide clients with information about the treatment alternatives available to them and which outcomes are most likely to result from each choice. Given this knowledge, it should be the client's right to decide what types of treatment, if any, he wishes to undergo.

As noted earlier, aversion therapy has proved least effective with sexual deviants who are coerced into treatment in an attempt to change their behavior in the direction of conformity with more conventional practices. In cases where their conduct threatens the welfare of others, they have the choice of either altering their injurious behavior or having their freedom revoked. There are other forms of sexual activities, however, which are also legally prohibited, such as cross-sex dressing and homosexuality involving consenting adults, that generally have no adverse consequences for others. As sexual mores undergo further changes private consensual sexual behavior between adults will eventually be legalized. Nevertheless, deviant sexual practices will continue to be subjected to social ridicule and, hence, to serve as a source of emotional disturbance. After threat of criminal sanctions is

removed, persons who seek to alter their sexual orientation will do so under motivational conditions that are more favorable for achieving behavioral changes.

## Summary

This chapter is primarily concerned with classical aversion treatment of exceedingly persistent behavior that is maintained by inappropriate, potentially harmful, or culturally prohibited positive reinforcers. This stimulus-oriented approach attempts to establish control over behavior by endowing formerly attractive stimuli or symbolic representations of deviant activities with negative properties through contiguous association with aversive experiences. These negative experiences are typically induced by administering nauseous pharmacological agents or unpleasant shocks, or they may take the



form of symbolically revived feelings of revulsion.

Aversive counterconditioning is not regarded as a process in which aversive reactions become directly and automatically attached to formerly positive stimuli. Rather, the counterconditioning procedure establishes an aversive self-stimulation mechanism which enables persons to counteract the disposition to engage in deviant behavior by symbolically reinstating nauseous reactions previously experienced in treatment. The most direct evidence that conditioned aversions represent, in large part, self-induced reactions, rather than automatic products of stimulus pairings, is provided by laboratory studies demonstrating that classically conditioned responses are amenable to symbolic control. Viewed from this perspective, aversive counterconditioning creates a means of self-

control rather than automatic immunity to addictive or rewarding stimuli.

Aversive procedures have been applied most extensively to harmful addictive behaviors and to various types of sexual aberrations. Treatment programs aimed at modifying sexual disorders usually involve differential conditioning of sexual responsiveness, wherein aversion is developed to fetishistic, transvestite, or homoerotic stimuli, while concurrently erotic arousal properties are conditioned to heterosexual stimuli. The summary of results, based mainly on single case studies, indicates that this mode of therapy can, in addition to eliminating deviant sexuality, assist in promoting heterosexual behavior, provided that these alternative responses already exist in the person's repertoire and that environmental conditions are favorable for maintaining them. On the other hand, an exclusively aversive form of

therapy is much less effective in cases where heterosexual behaviors are either lacking or strongly inhibited. In the latter conditions, aversive counterconditioning must be supplemented with procedures designed to develop behavioral patterns that will enable persons to engage in rewarding heterosexual interactions.

Similarly variable outcomes have been obtained in the counterconditioning treatment of chronic alcoholism. Aversive procedures alone have proved most successful with alcoholics who possess sufficient personal resources to derive adequate gratifications from sober behavior. In most cases, however, the treatment must also be directed toward the conditions that control drinking behavior. This might involve development of behavioral competencies to the point where sober behavior is sufficiently

reinforcing to predominate over anesthetic avoidance; the lowering of standards for self-reinforcement that result in self-generated aversive consequences; and, in cases where excessive drinking is controlled by relief from interpersonal stresses, the desensitization of primary sources of tension and anxiety.

Of particular interest are studies demonstrating that symbolic events, which may serve as important internal elicitors of deviant behavior, are modifiable through aversive conditioning. When imagery possessing affective value is repeatedly paired with negative experiences, the symbolic events not only lose their arousal potential but they are less frequently self-generated. The imaginal counterconditioning is generally accompanied by reductions in the corresponding behavior.

The major value of aversive procedures is that they provide a rapid means of achieving control over injurious behavior for a period during which alternative, and more rewarding, modes of behavior can be established. A treatment which addresses itself to both stimulus and response events is most likely to yield uniformly favorable results because it not only alters the valence of stimuli that evoke deviant behavior, but also creates reinforceable response patterns.

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## Symbolic Control of Behavioral Changes

Both complex behaviors and even relatively simple performances that have generally been assumed to represent direct linkages between external stimuli and overt responses are extensively controlled by symbolic processes. These higher level activities involve, among other things, strategic selection of the stimuli to which attention is directed, symbolic coding and organization of stimulus inputs, and acquisition, through informative feedback, of mediating hypotheses or rules which play an influential role in regulating response selection.

The introductory chapter considered in some



detail questions regarding variables that govern the occurrence of symbolic events, the different forms that mediators may take, and the conditions under which they exercise cue function in directing overt actions. The present chapter is focused on the extent to which behavioral change processes are affected by persons' awareness of stimuli impinging upon them, responses that they are exhibiting, consequences that their behavior incurs, and the contingencies that exist among the latter events. In addition, relationships between attitudinal and behavioral changes are reviewed with particular reference to the development of self-regulatory mechanisms.

### **Role of Awareness of Contingencies in Behavioral Change**

A number of different theories have been suggested concerning the functional role of symbolic activities, which is usually subsumed

under the general term “awareness,” in the behavioral change process. The main alternative views are depicted in a simplified form in Figure 9-1, following the schematization of Farber (1963) and Spielberger & DeNike (1966).

According to the *nonmediational theory* of learning (Skinner, 1953; Thorndike, 1933), reinforcing consequences act directly and automatically to strengthen preceding overt responses. While learning occurs independently of awareness, a person may eventually recognize the reinforcement contingencies from the high output of correct responses. In this view, however, awareness is a resultant rather than a precondition of change.

The *independent response systems theory* (Verplanck, 1962), which is a more recent version of the foregoing position, treats awareness as

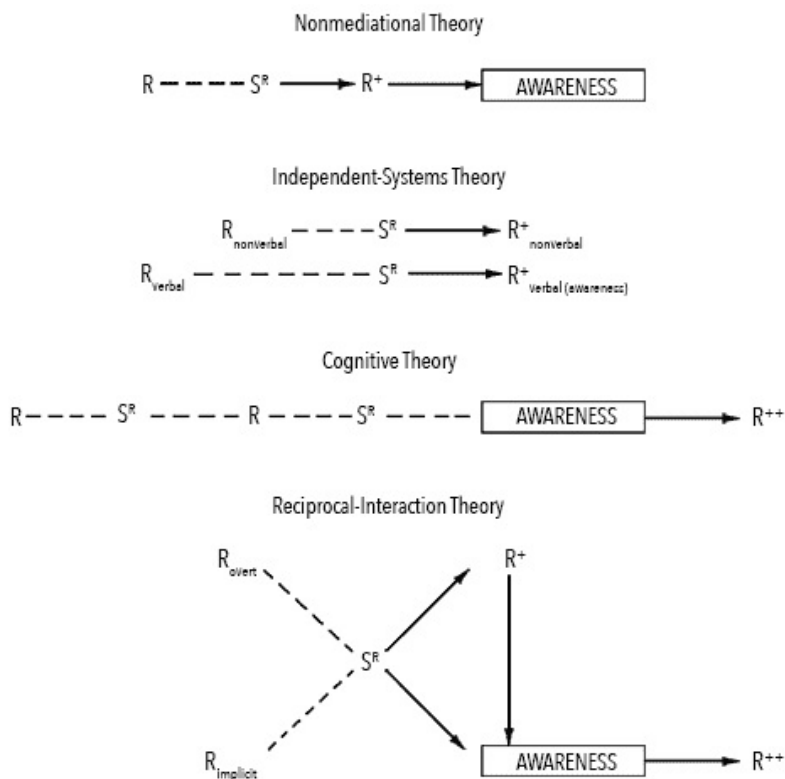


Figure 9-1. Schematization of the functional relationship between awareness and response change. Dashed lines represent temporally contiguous events, arrows denote causal relationships, and plus signs designate the magnitude of response change.

merely a verbal operant rather than as a factor that controls performance. Since verbal and nonverbal classes of behavior represent independent response systems, almost any type of relationship can be obtained between these two sets of events, depending upon the manner in which their governing reinforcement contingencies are arranged. Thus, verbalizations and actions will be congruent under conditions where the same contingencies are applied to verbal statements and the corresponding instrumental responses. On the other hand, verbalizations and actions can be made to diverge through the application of conflicting reinforcement to these two forms of response. Since reinforcing stimuli are assumed to exert automatic control over behavior independently of their effects upon awareness, this theoretical position also represents a nonmediational model

of behavioral change.

According to the *cognitive view* (Dulany, 1962, 1968; Spielberger & DeNike, 1966), which stands in marked contrast to the preceding formulations, awareness is considered a prerequisite for learning and improvement in performance. The information conveyed by reinforcing stimuli, rather than their response-strengthening effects, is highlighted in this point of view. It is assumed that, in the course of observing the differential consequences associated with different types of responses emitted, subjects test various hypotheses about the required response class and eventually figure out what they are supposed to do. The acquired information, in turn, gives rise to intentions or self-instructions to produce the correct responses, the strength of the tendency depending upon subjects' valuation of the contingent incentives. The magnitude of

performance gains is thus primarily a function of the accuracy of the guiding hypothesis and the incentive value of the consequences. However, no conditioning can presumably occur without either partial or correct symbolic representation of the reinforcement contingencies.

The *reciprocal interaction theory* (Farber, 1963; Postman & Sassenrath, 1961), on the other hand, assumes that awareness is both a consequent and a condition of behavioral change. According to this view, a certain amount of learning can take place from the automatic action of aftereffects, independently of subjects' understanding of the basis on which reinforcements are administered. During the learning process, however, subjects not only make overt responses, but they also develop thoughts or hypotheses about the responses required to obtain reinforcement. These self-generated rules

serve as discriminative stimuli for directing instrumental actions in essentially the same way as external stimuli control behavior. Accurate hypotheses are likely to be accompanied by correct overt responses, whereas erroneous hypotheses tend to coincide with inappropriate performances. Consequently, symbolic events are selectively strengthened, maintained, or extinguished by the differential reinforcements administered for the more distally occurring overt behavior. The emergence of awareness may, of course, be facilitated by performance gains which make the contingencies more obvious. Once the correct hypothesis is established, it can result in a substantial increase of appropriate responding, given adequate incentive conditions.

The acquisition of rules and their functions in regulating performance are typically studied in concept identification and other forms of

discrimination learning. In these paradigms subjects must categorize different stimuli on the basis of some common property that the experimenter has arbitrarily selected as relevant for the classification. In more complex situations the correct responses are defined in terms of a combination of attributes rather than a single common element. Under these circumstances, subjects must abstract the relevant stimulus dimensions and formulate a rule about how the different attributes combine to specify the appropriate behavior (Bourne, 1966; Shepard, Hovland, & Jenkins, 1961).

Numerous experiments have been conducted in which subjects are asked to state the rules they employed for making responses. When hypotheses are measured after subjects have performed and experienced the outcome, it is difficult to determine whether the responses were derived



from a rule or the rule was inferred from the correct responses. This interpretive problem does not arise when rule statements are recorded prior to performance and measures are obtained of the degree to which they control trial-by-trial responding. Studies of this type show that rules can be strengthened either by direct reinforcement or indirectly through response outcomes and that they serve as a primary determinant of overt behavior (Dulany & O'Connell, 1963; O'Connell & Wagner, 1967). However, under conditions where stimuli are more complex and verbal control over responding is not explicitly encouraged, accurate performance often occurs in the absence of adequate verbalized rules (Hislop & Brooks, 1969).

Several different approaches, some of which were discussed earlier, have been employed in experimental analyses of the role of symbolic

activities in behavioral change processes. These have included investigations of verbal conditioning rates as a function of awareness of response-reinforcement contingencies, mediational control of classical conditioning and extinction, the occurrence of semantic generalization in which a common cognitive associate of heterogeneous stimuli provides the basis for generalization, covert verbal control of problem-solving activities, and the influence of recognition and discrimination of weak stimuli upon discriminative nonverbal behavior.

The methods of assessing symbolic activities have been equally varied. In some studies awareness is manipulated instructionally through explicit descriptions of the response-reinforcement contingencies given prior to the conditioning series. More frequently, however, awareness is inferred from observations about the

experiment reported by subjects either at periodic intervals during the course of conditioning or in interviews conducted immediately following the experimental session. In other cases, awareness is manipulated indirectly by arranging conditions that either facilitate or impede recognition of contingencies during the acquisition process.

### **Verbal Conditioning as a Function of Awareness**

Innumerable studies employing paradigms of verbal conditioning have been conducted in order to determine whether response consequences increase performance primarily by effecting voluntary symbolic control over available responses or through a process of automatic response strengthening. Although the issue of whether learning can occur without awareness is by no means settled (Farber, 1963; Kanfer, 1968; Postman & Sassenrath, 1961), most experiments

fail to obtain performance gains in the absence of accurate or at least partially correct hypotheses regarding the reinforcement contingencies (Adams, 1957; Dulany, 1962; Spielberger & DeNike, 1966). Subjects who are able to describe the responses required for reinforcement generally show a substantial increase in appropriate responses, whereas exposure to reinforcement contingencies is relatively ineffective in modifying the behavior of subjects who remain unaware.

Experiments utilizing post-acquisition measures of awareness furnish inconclusive results, since it is entirely possible that subjects may initially condition without awareness and later recognize the reinforcement principle employed when it is made more apparent by the increased output of correct responses. In order to establish whether awareness precedes or follows

behavioral change it is therefore necessary to assess subjects' speculations about the experimental contingencies at periodic intervals during the acquisition process. DeNike (1964), for example, asked college students, who were reinforced for human noun responses in a word-naming task, to write down their "thoughts about the experiment" after each block of 25 words during conditioning. On the basis of the written reports, approximately a third of the subjects were judged to have gained awareness of the contingency at different points in the series, while the remainder were categorized as unaware. A control group of subjects, who were reinforced on a random basis for 10 percent of their responses, was also included. As can be seen from Figure 9-2, aware subjects displayed a substantial increase in human noun responses, whereas unaware subjects, like the control group, showed no

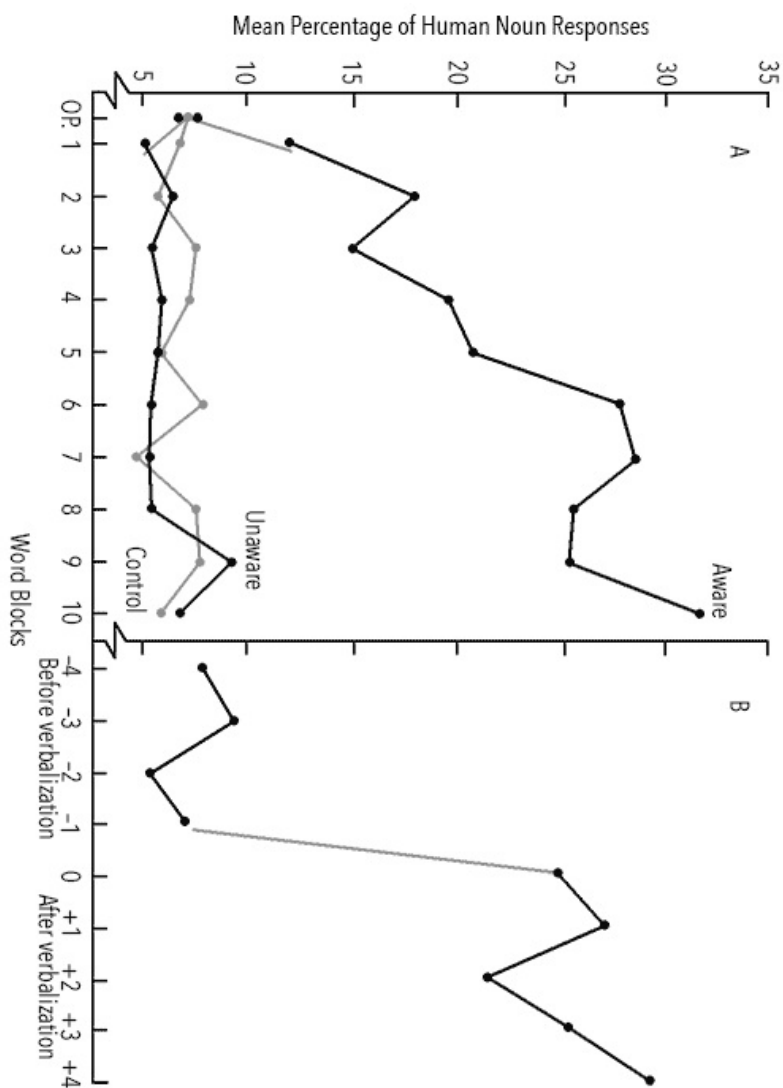


Figure 9-2. (A) Mean percent human noun responses given by aware, unaware, and control groups in the verbal conditioning task. (B) Mean percent of correct responses given by subjects in the aware group prior to and after verbalization of the reinforcement contingency. Spielberger & DeNike, 1966.

performance gains whatsoever. Of considerably greater interest, however, is the temporal relationship obtained between the emergence of awareness and the occurrence of large performance increments. Subjects displayed no significant rise in the number of critical responses before they were able to report the reinforcement contingency, but they markedly increased their output of reinforced responses after they had discerned the contingency governing the administration of social rewards (Figure 9-2). Considering, however, that each block contained 25 trials, it is entirely possible that awareness may still have resulted from behavior change during the block in which the contingency was discerned. A stringent test of mediational control of performance changes would require a trial-by-trial inquiry.

Results of experiments conducted by

investigators who differ widely in their views regarding the role of awareness in learning consistently demonstrate that symbolic representation of the conditions of reinforcement has a strong facilitative effect upon overt performance. The empirical data diverge, however, on the question of whether any learning can take place without symbolic mediation. The findings of Dulany, DeNike, & Spielberger may be contrasted with those of Hirsch (1957), Philbrick & Postman (1955), and Sassenrath (1962), who likewise have analyzed performance curves as a function of the temporal appearance of awareness, and find small but significant improvements in performance prior to correct statement of contingencies, particularly among subjects who eventually developed complete awareness (Figure 9-3). Evidence of verbal conditioning without awareness is usually dismissed by staunch



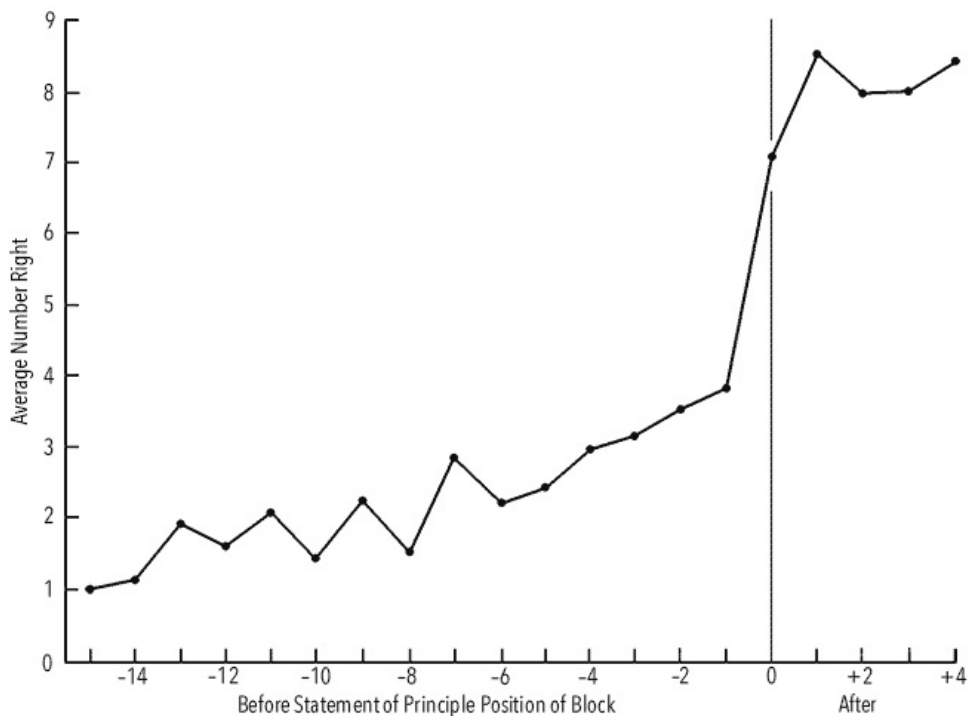


Figure 9-3. Average number of correct responses given on blocks of words at varying distances from the point at which the principle was first verbalized correctly. Philbrick & Postman, 1955.

adherents to cognitive explanations as probably either the result of insensitive methods for gauging awareness, or the operation of partially correct hypotheses.

Although virtually all investigators subscribe, albeit uneasily, to the same operational definition of awareness (i.e., correct verbalization of response-reinforcement contingencies), a number of factors may lead to inaccuracies and inconsistencies in composing aware and unaware groups of subjects. First, awareness is usually treated as an all-or-none phenomenon, when in fact it may vary in accuracy from a correct determination, through partially correlated hypotheses, to highly misleading notions about why the subject is being rewarded. As Adams (1957) has noted, partially correct formulations (e.g., a subject believes that the experimenter is interested in comments about people when

actually familial references is the correct response class) can produce some increases in performance. Because criteria of awareness are somewhat arbitrary, the types of relationships obtained between events are partly dependent upon the stringency of definitions employed by different investigators.

A second major complication in the assessment of awareness arises from the fact that a number of other variables, quite apart from the amount of relevant information possessed by the subject, may contribute to the types of verbal reports that are obtained.

Awareness is frequently inferred from responses to a series of progressively more suggestive interview questions. Therefore, the number of subjects judged to be aware is determined to some extent by the number and

nature of informative cues conveyed by the interview probes. The more intensive the questioning the less the likelihood that partially aware subjects will be erroneously categorized as unaware, but also the greater the danger that the assessment procedure itself may induce recognition of the correct contingency that did not exist at the time of conditioning. Thus, Levin (1961) found evidence of learning without awareness when subjects' discernment of contingencies was estimated from a brief interview, whereas categorization of the same subjects on the basis of their replies to a more extended specific inquiry yielded a peculiar set of results, in which subjects who were unaware of both the contingency and the reinforcer displayed as much conditioning as subjects who were fully aware, and a higher rate of response than a group that was only aware of the reinforcing stimulus.

While this irregular pattern of relationships does not support the common assumption that comprehensive assessments furnish more valid measures, it should be noted that early studies of verbal conditioning, which reported relatively high incidences of learning without awareness (Krasner, 1958), generally relied upon brief examinations that may not have been sufficiently sensitive to detect partial degrees of awareness. The unreliability of post-acquisition reports of awareness is further underscored by Weinstein & Lawson (1963), who found that interviews of the kind widely employed in this line of research yielded complete awareness in only half the subjects who had been fully informed, midway through the experiment, of the contingencies and the entire purpose of the study. Based upon criteria utilized in earlier experiments, approximately half the sample would have been

misclassified and their improved performances interpreted as evidence for learning without awareness.

In addition to the influence of the type of measurement procedures employed, the likelihood that subjects will report awareness is reduced if they are examined by a female or a person of low status (Krasner, Ullmann, Weiss, & Collins, 1961), if a negative valence is attached to the reinforced class of responses (Krasner & Ullmann, 1963), if they feel hostile toward the experimenter (Weiss, Krasner, & Ullmann, 1960), and if they obtained information about the contingencies spuriously (Levy, 1967). Moreover, there is some evidence (Rosenthal, Persinger, Vikan-Kline, & Fode, 1963) that experimenters who are biased to expect a high incidence of awareness obtain it more frequently than those who assume it to be a relatively uncommon

phenomenon.

It is possible to control, to some extent, for the operation of experimenter bias by relying upon written reports rather than interview procedures, which provide greater opportunities for inadvertent influence of respondents' accounts. Also, reluctance to disclose provisional judgments about the experiment, and intentional distortions, might be effectively counteracted by the provision of positive incentives which would maximize verbalization of the information that subjects do possess. It is evident from the data cited above that if much importance is to be attached to studies of symbolic mediation of learning based upon information provided by subjects, then extensive research is needed to identify the variables influencing reported awareness with a view toward further improving the accuracy of such measures.

Because of the numerous problems associated with phenomenological data, some researchers have recommended that awareness be relegated to the status of a dependent variable and treated as a verbal operant. This type of approach decisively solves a technical problem at the expense of a potentially influential independent variable which, under some conditions, can exert more powerful discriminative control over behavior than reinforcement variables (Ayllon & Azrin, 1964; Dulany, 1968; Kaufman, Baron, & Kopp, 1966).

Granted all the deficiencies of verbal reports as indicants of subjects' level of awareness, findings based on the temporal relationship between awareness and performance nevertheless indicate that one can predict with considerably greater accuracy performance increments during the course of conditioning by taking into account



subjects' hypotheses than if self-instructional influences are disregarded.

The host of methodological and interpretive problems associated with post-acquisition measures of awareness can be easily avoided by the use of research procedures in which knowledge about reinforcement contingencies is experimentally induced rather than inferred from subjects' verbal reports. Experiments in which subjects are informed of the appropriate responses and their consequences prior to conditioning disclose substantial symbolic regulation of overt performances.

Situations of social conditioning contain a number of different elements of which a person might become aware. These separable events include the environmental cues eliciting his behavior, the class of responses considered

appropriate to the situation, the occurrence and scheduling of reinforcements, and the contingent relation between the latter classes of events. Some of the experiments in which awareness is manipulated experimentally have been specifically designed to compare the relative efficacy of insight into the different aspects of the behavioral influence process. Dulany (1962), for example, found that students who were informed about the correct response-reinforcement contingency and those who received only response instructions markedly increased their output of correct responses compared both to their baseline rates and to the performance of control groups who were apprised only of the reinforcing events or given no information. The latter groups, in fact, exhibited no significant improvements in performance. In this study, knowledge of the desired behavior was the critical determinant,

since the addition of reinforcing consequences in the form of either tones, “Um-hmms,” or omission of electric shocks did not augment the change process.

In a subsequent study Dulany (1968) had students perform a verbal conditioning task in a chamber kept at a temperature of 110° and utilized a contingent stream of air of either 70°, 100°, or 150° as positive, neutral, or negative reinforcers for different groups of subjects. Students within each of the reinforcement conditions were also given different reinforcement instructions: that the stream of air signified a correct response, an incorrect response, or had nothing to do with their performance. Dulany found that reinforcement instructions exercised greater control over conditioning performance than did the nature of the reinforcing consequences.

The findings of Dulany are, in large part, corroborated by Kaufman, Baron, & Kopp (1966), who provided students with complete or minimal information about the required response, and either accurate or erroneous knowledge concerning the schedule according to which rewarding consequences would be administered. One group of students was accurately informed that rewards would be forthcoming each minute on the average (variable interval schedule), whereas other groups were misled into believing that their behavior would be reinforced either on a fixed interval of one minute, or after they had performed 150 responses on the average (variable ratio schedule).

Inspection of Table 9-1 reveals that knowledge about the required behavior markedly increased subjects' rate of responding. Even more impressive, however, is the finding that illusory

schedules governed students' responsiveness in much the same way as they do in reality: Fixed interval instructions produced very low rates, variable ratio instructions maintained an extremely high response output, and variable interval instructions generated intermediate rates of response. Alleged schedules thus outweighed the influence of the program of reinforcement that was actually imposed on students' behavior. A further study disclosed that reinforcement had little effect upon performance rate under conditions of minimal response specification, but students who had received variable ratio instructions combined with monetary rewards were approximately twice as productive as those who were furnished the same schedule information without any reinforcing consequences. Instructional influences can be equally powerful in regulating responsiveness

under aversive contingencies. Simply exposing subjects to punishing contingencies proved to be an extremely inefficient way of altering behavior, whereas instructions about the appropriate behavior and its consequences immediately produced stable and discriminated avoidance behavior (Baron & Kaufman, 1966; Scobie & Kaufman, 1969).

Table 9-1 Median Number of Responses Performed per Minute as a Function of Information about the Required Response and Alleged Schedules of Reinforcement (adapted from Kaufman, Baron, & Kopp, 1966)

Experimental Condition	Response Rate	
	First 30 Min.	Last 30 Min.
No schedule information		
Minimal response instruction	17	17
Complete response instruction	161	161
Schedule information		
Variable interval	88	43
Fixed interval	5	7
Variable ratio	250	269

It is noteworthy that among persons who have achieved complete awareness the extent to which this knowledge continues to govern their behavior during extinction depends upon the type and schedule of reinforcement applied during the acquisition process (Hirsch, 1957).

The experiments of Ayllon & Azrin (1964), in which highly persistent behavior of psychotics was modified in naturalistic settings, reveal that when discrepancies exist between verbally represented contingencies and actual consequences, instructional influences lose their potency over time, and behavior comes more extensively under the control of the prevailing conditions of reinforcement. These data underscore the necessity for exercising considerable caution in generalizing about the relative efficacy of cognitive and reinforcement variables on the basis of exceedingly brief

experiments conducted with cooperative college sophomores who are offered trivial rewards for performing inconsequential responses that require little expenditure of effort, under conditions where they are expected to participate in experiments in partial fulfillment of course requirements.

The findings of investigations in which awareness is experimentally induced are in accord with those furnished by studies relying upon report-inferred measures. We return now to the major controversial issue: Is awareness a prerequisite for behavioral change? Proponents of cognitive theories have been unable to find any evidence of verbal conditioning in the absence of correct or correlated hypotheses, whereas Postman and his colleagues report, on the basis of experiments involving more complex reinforcement contingencies, that a significant



amount of learning can take place prior to verbalization of the basis for reinforcement. These divergent conclusions do not appear to be attributable to any major differences in the definition and assessment of awareness. Nor can they be accounted for in terms of the operation of partially correct hypotheses, since the use of partially relevant hypotheses in the concept learning task did not facilitate performance (Hirsch, 1957; Postman & Sassenrath, 1961), and the phenomenon is evident even when awareness is defined to include partially correct verbalizations (Sassenrath, 1962).

Some additional suggestive evidence of behavioral change without awareness is furnished by investigations involving more complex tasks, such as probability learning, in which persons predict alternative events or outcomes that vary in their frequency of occurrence. In these situations,

persons' choice behavior gradually adjusts to the event probabilities even though the vast majority of subjects are not only unable to state the probability rules, but frequently entertain quite erroneous hypotheses (Goodnow & Postman, 1955).

Discrepancies in results may, in part, result from the complexity of the principle governing the administration of reinforcement and the response restrictions imposed by the nature of the learning task. Studies in which verbalization is accompanied by dramatic performance gains have generally involved relatively explicit response classes or simple discrimination tasks in which subjects are asked to construct sentences by selecting one of several personal pronouns or verbs printed on cards. When the critical response class is unambiguous and the response alternatives are severely curtailed, both

awareness and “learning” are most likely to occur as a one-trial event rather than as an incremental process.

Considering the feeble and inconsequential nature of the reinforcers employed in most verbal conditioning experiments, one might seriously question whether reinforcement processes, which presumably govern automatic response-strengthening effects, are even operative in most of the studies that have been reviewed. This issue is, of course, of little or no concern to researchers who are quite content with a circular empirical law of effect. Nevertheless, it is important to distinguish between the informational and incentive properties of feedback stimuli, both of which may enhance correct responding (Keller, Cole, Burke, & Estes, 1965). Flashing lights, buzzer noises, and ambiguous guttural sounds can convey to subjects adequate information for altering their

behavior, but it is exceedingly doubtful that such feedback events have much rewarding value as determined independently of response changes on the conditioning task.

In view of the fact that verbal conditioning procedures are designed to augment the production of existing responses under conditions where both response and reinforcing events are highly salient, the findings may have more relevance to issues of social conformity than to conditioning. Although the verbal conditioning paradigm is adequate to demonstrate the facilitative role of awareness upon performance, it is poorly suited to throw much light on the more basic theoretical issue of whether awareness is a prerequisite for learning or performance change.

The question of whether learning must be consciously mediated can be answered most

decisively by studies in which the reinforced responses are not observable to the performer, or the reinforcing events are devoid of informational cues but of sufficient rewarding value to activate mechanisms regulating reinforcement effects. Either of the latter conditions would effectively preclude recognition of the contingency employed. The studies discussed earlier, in which correct responding in animals was significantly increased by intravenous presentation of nutritive solutions, would seem to dispute the radical cognitive view. Such reinforcing events are not observable and, therefore, convey no information to the subject.

There is evidence that covert responses, such as invisibly minute thumb contractions, can be successfully conditioned in adult humans without their observation of the rewarded responses (Hefferline & Keenan, 1963; Hefferline, Keenan, & Harford, 1959; Sasmor, 1966). These studies

provide further convincing demonstrations of how persons learn to respond in accordance with reinforcement contingencies without appropriate symbolic mediation. In the latter experiments subjects are equipped with several sets of electrodes, ostensibly to measure their ability to relax. A visually imperceptible thumb contraction of a preselected magnitude, detected by the experimenter through electromyographic amplification, is then selected for modification through reinforcement either in the form of monetary rewards or termination of aversive stimulation. Responses in the chosen amplitude category increase substantially during reinforcement and decline abruptly after reinforcement is withdrawn. As might be expected, none of the subjects could identify the response that produced reinforcement.

Apart from the laboratory findings, it is

difficult to believe that planaria, goldfish, and other lower organisms, which lack the anatomical structures for adequate symbolic representation of environmental events, are totally unaffected by response consequences until they have accurately cognized their experimenter's contingencies. Implicit mediators would, of course, assume an important role in governing performance in tasks that require response on the basis of relatively complicated principles or rules.

The overall evidence would seem to indicate that learning can take place without awareness, albeit at a slow rate, but that symbolic representation of response-reinforcement contingencies can markedly accelerate appropriate responsiveness. The validity of this view, which assumes a reciprocal interaction between awareness and performance gains, seems even more probable when one realizes the

limitations of paradigms of verbal conditioning for elucidating the role of symbolic activities in behavioral change processes.

### **Interactive Effects of Cognitive and Incentive Variables**

Although awareness of environmental contingencies is usually accompanied by some gains in performance relative to baseline rates, the absolute level of responsiveness after the contingencies have been either ascertained or divulged remains comparatively low. That is, performance increases are generally in the order of 20-30 percent, which can hardly be considered a massive outpouring of correct responses. It is also extremely likely that if the experiments were extended beyond the usual single session, symbolic control, in the absence of supporting incentives, would decrease over time and the desired behavior might eventually return to its



original level. Moreover, even in short-term situations embodying high demand characteristics, a significant number of aware subjects never do show any change in their behavior (Farber, 1963). Hence, the findings of verbal conditioning studies, rather than demonstrating the potency of symbolic control, in fact illustrate the limitations of approaches that rely primarily upon cognitive variables to effect behavioral changes. The experiments do provide considerable evidence, however, that awareness *combined with* incentive-related variables can exert a powerful influence over behavior.

Spielberger, Bernstein, & Ratliff (1966) compared the response rate of aware and unaware subjects during an initial phase of the experiment in which “Mm-hmm” served as the reinforcer, and after an effort was made to bolster the incentive value of the utterance by challenging

subjects to produce as many “Mm-hmms” as they possibly could. Students who remained unaware throughout both phases of the study showed no evidence of conditioning; those who discovered the contingency prior to the incentive manipulation displayed moderate improvements in performance followed by extremely high response rates under the heightened motivational conditions; a third group of subjects, who became aware after the incentive manipulation, exhibited an intermediate level of responding (Figure 9-4).

Studies in which reinforcing properties of the feedback events are evaluated by subjects (Spielberger, Berger, & Howard, 1963; Spielberger, Levin, & Shepard, 1962) rather than being varied independently likewise disclose that, among aware subjects, those who prize the reinforcers show a high output of criterion behavior. By contrast, aware subjects who are

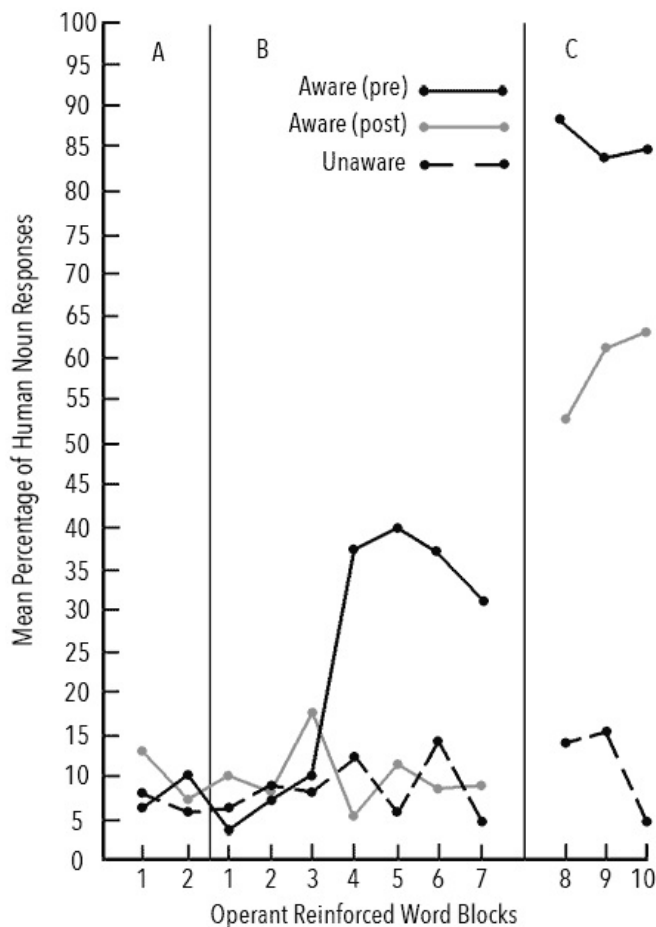


Figure 9-4. Mean percent of correct responses given during the baseline (A), low-incentive (B), and high-incentive (C) phases of the experiment by subjects who either discovered the reinforcement contingency prior to or after the incentive manipulation or remained unaware throughout the experiment. Spielberger, Bernstein, & Ratliff, 1966.

indifferent to, or annoyed by, experimenters' guttural utterances may perform some correct responses in order to confirm their speculations, but otherwise they are about as unproductive as their unaware counterparts.

In addition to the influence of incentives specifically associated with the desired behavior, more generalized sets may determine the extent to which persons will behave in accordance with their knowledge of social contingencies. Farber (1963) and Holmes (1967) found that aware subjects with cooperative dispositions displayed a sharp increase in reinforced responses, but nonconforming aware subjects showed relatively little change in behavior and did not differ in this respect from subjects who remained unaware.

While awareness typically facilitates performance, where the correct responses carry

negative connotations, awareness may exert inhibitory effects upon performance, as shown in the study by Ekman, Krasner, & Ullmann (1963). Among aware subjects, those who were led to believe that the verbal conditioning task exposed personal debilities exhibited fewer responses during reinforced trials compared to their baseline rates, whereas those who were informed that the task measured empathy and warmth toward people showed a substantial increment in reinforced responses. On the other hand, groups of unaware students who received the same negative and benign sets displayed relatively small response gains and did not differ from each other.

It is apparent from the research thus far reviewed that awareness of reinforcement contingencies has greater behavioral consequences under laboratory conditions than appears to be the case in naturalistic or

psychotherapeutic situations. This difference may be attributable to several factors. Based upon the findings previously discussed, one would not expect development of insight into social contingencies to produce much change in behavior if the customary incentives are weak, delayed, or only sporadically applied, as is often true in realistic circumstances. Second, the responses chosen in experimental studies (e.g., plural responses, verbs, personal pronouns, emotion-arousing words) are readily available within subjects' repertoires, and the task is primarily a matter of response selection rather than response acquisition. In most behavioral change programs, on the other hand, individuals must develop behavior requisite to bring them into contact with prevailing contingencies, rather than merely gaining information about what one would have to do in order to obtain reinforcement. Acquired

insights, no matter how valid they may be, have limited utility for individuals who lack the necessary performance skills. The case is analogous to informing English monolingual students in verbal conditioning experiments that the criterion responses are Hindustani adjectives.

### **Symbolic Control of Classical Conditioning Phenomena**

Consistent with findings from studies of instrumental conditioning, results of numerous investigations of classical conditioning (Grings, 1965) reveal extensive mediational control of conditioned autonomic responses. This process has been demonstrated in several different ways. In one experimental approach to the problem, subjects are informed that the CS will sometimes be followed by shock; they are then given a sample shock or a single confirmation trial during the acquisition series when autonomic responses to

the CS are measured. The studies (Bridger & Mandel, 1964; Cook & Harris, 1937; Dawson & Grings, 1969) show that autonomic responses are readily conditioned through association of stimulus events with anticipatory emotional responses.

Data of this sort have led to suggestions that a distinction be drawn between genuine conditioning and perceptual or relational learning (Grings, 1965; Razran, 1955). Implicit in this dichotomy is the assumption that conditioned emotional responses established through instructional manipulations represent a “pseudo-conditioning” phenomenon. An alternative conceptual scheme, which has the potential of elucidating the process without proliferating unnecessary varieties of learning, would hold that conditioning based upon the occurrence of actual versus imagined events mainly involves



differences in the locus of the emotion-producing stimulus rather than in the governing mechanism.

It is extremely unlikely that verbal association of events alone is sufficient to establish conditioned responses, since a stimulus capable of activating the autonomic responses is also required. There is consistent evidence from studies in which autonomic responses are continuously recorded during desensitization sessions (Clark, 1963; Mackay & Laverty, 1963), and from controlled laboratory investigations (Barber & Hahn, 1964), that imagined aversive events can produce emotional effects analogous to the actual Occurrence of aversive stimulation. These findings indicate that subjects can acquire conditioned responses in the absence of an externally administered UCS to the extent that prior instructions lead them to generate fear-producing thoughts in conjunction with the CS. On

the other hand, verbal instruction alone would not be expected to produce any conditioning in subjects who did not engage in appropriate covert self-stimulation. According to this self-arousal formulation, instructional conditioning may represent a variant of the basic conditioning paradigm in which autonomic responses are cognitively induced rather than directly elicited by aversive stimuli under the experimenter's control.

The foregoing conceptualization implies that, rather than representing a simple process in which external stimuli are directly and automatically connected to overt responses, classical conditioning is partly mediated through symbolic activities. In the mediational interpretation, the CS elicits covert symbolic activities that produce autonomic responses. Some suggestive evidence for the influential role of self-stimulation in instructional conditioning is

provided by Dawson (1966), who found that the degree of belief in instructions that shock would follow a certain signal and the amount of anticipation of shock were positively correlated with extent of autonomic conditioning.

The influential role of mediational variables in classical conditioning is also supported by other lines of evidence. Fuhrer & Baer (1965), for example, demonstrated that subjects who recognized the CS-UCS relationship while undergoing differential conditioning of GSR responses demonstrated considerable autonomic conditioning. In contrast, subjects who remained unaware of the stimulus contingencies did not respond differently to auditory stimuli that were associated with shock and to those never paired with aversive stimulation. Dawson & Grings (1969) have likewise shown that masked CS-UCS pairings, which impeded recognition of the

stimulus contingency, were not sufficient to condition discriminative autonomic responses.

In order to ascertain if covariations in symbolic behavior and conditioned responses do involve a causal relationship, Chatterjee & Eriksen (1962) conducted an experiment in which awareness of the stimulus contingencies was manipulated in advance. One group of subjects was informed that a shock would only follow one particular word in a chain association task, but that aversive stimulation would be discontinued at a clearly designated point in the experiment. A second group was told that although shock would always follow a particular word in the list, each of the remaining words would be paired once with aversive stimulation and eventually shocks would cease altogether. A third group was instructed that a certain number of shocks would be administered during the experiment without implying a regular

contingency. Subjects in the first two groups, all of whom discerned the correct word-to-shock relationship, displayed conditioned heart rate responses, whereas subjects who received minimal information and remained unaware evidenced no conditioning. The controlling power of symbolic events is further shown by evidence that aware subjects exhibited strong autonomic responses to the critical stimulus but they did not generalize these responses inappropriately along either semantic or physical dimensions. Moreover, those who were informed when the extinction phase commenced showed a prompt and virtually complete loss of conditioned responses before experiencing any nonreinforced presentations of the conditioned stimulus.

In accord with the above finding, the most striking evidence of symbolic control of classically conditioned responses is provided by studies in

which extinction of autonomic responsiveness is compared in subjects who are told that there will be no further aversive stimulation and in those who remain uninformed. Induced awareness of the change in stimulus contingencies generally results in rapid and practically complete disappearance of conditioned responses to the CS (Cook & Harris, 1937; Grings & Lockhart, 1963; Wickens, Allen, & Hill, 1963). The decrement is most sudden and dramatic when subjects who, despite assurances to the contrary, suspect that they might continue to be shocked are excluded from the analysis (Bridger & Mandel, 1965). On the other hand, under circumstances where arousal level is maintained and the operation of cognitive factors is curtailed by disguising the conditioning procedures (Spence, 1966), extinction proceeds at a comparatively slow rate after reinforcement has been discontinued.

Although a strong causal relationship has been established between cognitive variables and rate of classical conditioning and extinction, it should not be concluded that all conditioned responses are necessarily consciously mediated. It seems extremely unlikely that in the case of interoceptive conditioning either the conditioned stimulus (e.g., intestinal distention) or the unconditioned stimulus (e.g., chemical stimuli presented internally) are symbolically represented. In these, and other experiments employing internal stimulative procedures (Razran, 1961), the contingencies are undoubtedly operating below the threshold of awareness.

There is also some evidence to indicate that the strength of symbolic control partly depends on the conditions under which emotional behavior was originally acquired. Bridger & Mandel (1964) found autonomic conditioning was similar

regardless of whether the CS was associated with threat of shock alone or with threat and shock stimulation (Figure 9-5). However, emotional responses established on the basis of actual painful experiences were less susceptible to cognitive control. Whereas threat- conditioned responses were promptly abolished by removal of electrodes and information that shocks would be discontinued, emotional responses produced by painful stimulation were much more resistant to extinction. The latter findings lend support to the view that conditioned responses typically contain dual components (Bridger & Mandel, 1965). One of the component parts, which is produced by the self-arousal mechanism, is readily manipulable by varying emotion-provoking cognitions. On the other hand, the nonmediated component is directly evoked by external stimulus events and requires disconfirming experiences for its



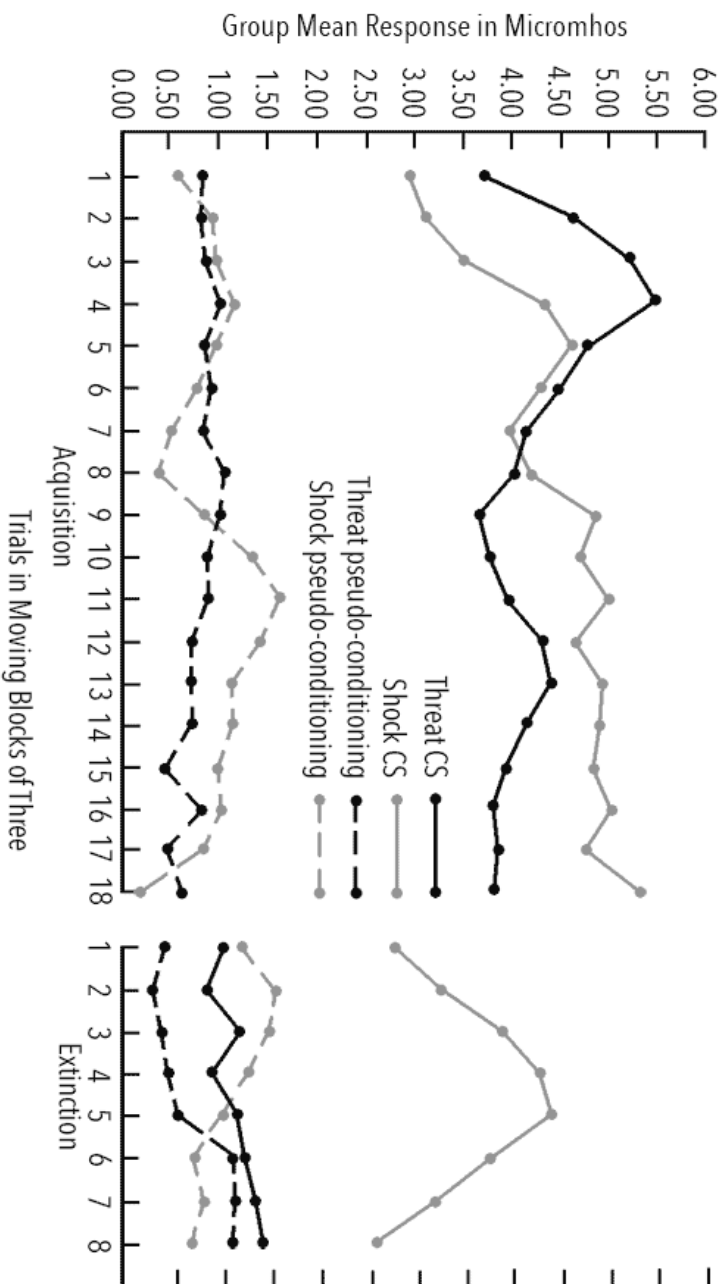


Figure 9-5. Mean GSR responses during acquisition and extinction for groups of subjects for whom the CS was associated with either threat of shock alone or threat plus shock. The pseudo-conditioning curves show the subjects' GSR responses to control stimuli that were never paired with either threat or shock. The latter data provide a control for the effects of general arousal and orienting mechanisms. Bridger and Mandel, 1964.

extinction.

A study by Mandel & Bridger (1967) of the interaction between cognitive influences and stimulus contingencies lends further validity to the view that conditioning outcomes typically reflect the operation of both associative processes and symbolic generative mechanisms. Subjects who were informed that no further negative reinforcement would occur showed marked decrements in conditioned autonomic responding; nevertheless the rate with which the response extinguished differed depending on the order in which conditioned and unconditioned stimuli were presented during the acquisition period and on the temporal interval between these stimulus events.

The nonmediational theory of classical conditioning assumes that, in order for

conditioning to occur, the associated stimulus events must at least be registered in the nervous system of the organism. Therefore, in studies assessing the role of awareness in conditioning, it would be of considerable value to obtain evidence that there has, in fact, been input from the conditioned stimulus. It is not inconceivable that in experiments employing masking procedures, in which subjects' attention is diverted to irrelevant features of the task, the conditioned stimuli may not be registered in a sufficiently consistent manner to produce stable conditioned responses. Hernandez-Peon, Scherrer, & Jouvett (1956) provide evidence, based upon neurophysiological studies, that attention focused on a particular stimulus simultaneously reduces afferent signals activated by other sensory stimuli. The evoked auditory potential in the cochlear nucleus of cats to a loud auditory stimulus was virtually

eliminated when they gazed at mice, attentively sniffed fish odors, or received electric shocks that distracted their attention. Horn (1960) has demonstrated a similar diminution of neural responses to a light flash during active attention to other visual and auditory cues. Although there is some dispute about whether the attenuation of sensory signals results from mechanisms operating at the periphery or at more central levels, there is no doubt that neural responses to afferent input can be substantially reduced by attending behavior directed toward irrelevant stimulus events.

Even in the absence of an experimentally induced diverting set, some subjects may choose to attend closely to extraneous stimuli, and thus fail to achieve appropriate registration, recognition, or conditioning. Under these circumstances, the absence of learning may be

erroneously attributed to lack of conscious recognition when, in fact, it derives from deficient stimulus registration. The most decisive demonstration that awareness is a necessary precondition for learning would require evidence that, despite adequate stimulus registration, classical conditioning does not occur without awareness of the stimulus contingency.

### **Implications of Symbolic Control for Behavioral Modification**

The therapeutic potential of symbolic processes has not been fully exploited although, contrary to common belief, behavioral therapies rely heavily upon effects which are cognitively produced. This is particularly true of desensitization treatments in which imagined stimulus events are characteristically employed to evoke emotional responses that ordinarily occur to the actual stimuli. In some variants of this

approach emotion-neutralizing responses are likewise induced symbolically. It is true that the therapist exercises a certain degree of instructional control over the timing and duration of clients' implicit activities, but no deconditioning effects are likely to ensue unless clients engage in appropriate cognitive representation of the suggested sequence of events. As noted in an earlier chapter, most desensitization methods represent a form of *cognitive counterconditioning* in which either the anxiety responses, the anxiety-neutralizing responses, or both sets of events are in large part symbolically controlled.

A similar higher-order conditioning process is involved in the modification of addictive or compulsive forms of behavior by means of *aversive cognitive counterconditioning* (Cautela, 1966; Miller, 1959, 1963). In the application of this procedure, individuals typically visualize the

objects to which they are markedly attracted and immediately revivify strong nauseous reactions. Preliminary results based upon individual case studies, which were reviewed in the preceding chapter, indicate that conditioned aversions and avoidance responses can be established in this manner.

The material discussed earlier attests to the fact that the most rapid and enduring changes in instrumental behavior are achieved when knowledge of contingencies is supplemented with appropriate reinforcing consequences. In interview approaches interpretations of probable contingencies and suggestions for preferable courses of action are offered repeatedly, but favorable outcomes are rarely arranged. On the other hand, practitioners utilizing reinforcement procedures carefully plan the necessary behavioral consequences, but often fail to specify

the basis for the reinforcement. It is apparent from the influential role played by cognitive variables in change processes that in an optimal treatment program change agents should designate the conditions of reinforcement in addition to arranging the requisite response consequences.

There is a further potential application of knowledge of symbolic control that is well worth exploring. It has been amply demonstrated that behavior is partly regulated by its immediate consequences. Extensions of this principle to the phenomenon of self-regulation (Bandura & Perloff, 1967; Ferster, Nurnberger, & Levitt, 1962) provide evidence that people can exercise a certain degree of control over their own behavior by arranging favorable contingencies for themselves. Extending this notion of self-management a step further, it is entirely possible that individuals may be able to control and alter their behavior by *symbolically*



*produced consequences.*

Many forms of behavior that eventually create adverse social or physiological effects are strongly maintained by their immediately reinforcing effects. If the remote consequences could be moved forward, or if other types of negative outcomes were applied to the incipient precursors of the behavior, its occurrence might be significantly reduced. In most cases, this rearrangement of consequences is difficult to achieve by manipulating actual reinforcing events. However, there is some suggestive evidence that symbolized outcomes possess reinforcing properties that are similar to their physical equivalents. Weiner (1965) found that both imagining aversive consequences and the actual occurrence of the same negative events reduced responding compared to a condition involving no feedback, although imagined outcomes produced

somewhat weaker reductive effects. These findings add credence to the view that overt behavior can be partly regulated by covert self-reinforcement operations.

Possible applications of this form of behavioral control are discussed briefly by Homme (1965) in a paper concerned with the conditioning of implicit responses. In dealing with such problems as excessive cigarette smoking, overeating, and other activities which produce immediate and automatic reinforcing effects, the individual selects numerous aversive consequences of the behavior which can be employed as covert negative reinforcers. When he wishes to smoke, for example, he immediately symbolizes the aversive effects of smoking, or revivifies other negative experiences. To the extent that sufficiently strong aversive consequences of smoking can be created by anti-smoking ideations,

smoking may be significantly reduced. Such implicitly produced consequences, if effective at all, are likely to exert greatest controlling power when applied to weaker incipient forms of the behavior than when the response tendency is quite compelling, or after the behavior has already been performed.

In the above examples cognitive activities are employed in a contingent manner as reinforcing events to reduce the incidence of overt behaviors. Often certain trains of thought produce strong emotional responses or disruptive effects upon behavior, in which case the problem becomes one of controlling the symbolic events themselves. In its less extreme but more prevalent form, this type of dysfunction tends to hamper persons' efficiency and productivity. As Dollard & Miller (1950) point out, productive and creative work requires, among other things, sustained attention to the task at

hand. Any interruptions from without, or intrusion by irrelevant thoughts from within, temporarily halt ongoing activities. Whereas the physical environment can be arranged so as to minimize external distractions, attainment of control of one's thoughts presents a much more challenging problem.

The most direct and effective means of reducing emotion-arousing intrusive thoughts is to modify their eliciting conditions by the types of procedures discussed in preceding chapters. Nevertheless, ruminations about upsetting experiences inevitably occur in everyday life and hence persons must develop effective means of ideational self-control which can be utilized whenever the need arises. By far the most prevalent, as well as the most futile, approach to this problem is to advise others simply to banish disturbing thoughts from their minds.

If a person is to achieve greater voluntary control over his thought processes he must manipulate variables which are capable of eliciting and sustaining competing ideational activities. This can be achieved in several different ways. The simplest is by effecting changes in attentional responses. That is, perturbing trains of thought can be promptly turned off by directing one's attention to absorbing events which elicit superseding cognitive activities. Indeed, this form of self-control, in which thought-produced arousal is diminished by engrossment in absorbing literary material, televised programs, vocational and avocational pursuits, and other engaging projects, is widely practiced inadvertently. Individuals could undoubtedly exercise greater self-control over their thought processes and attendant emotional responses through more deliberate use of prepotent activities which are

kept in reserve for this very purpose.

Although the discussion thus far has highlighted the possible tranquilizing effects of attentional changes, they can serve a preventive function as well. In many cases, a relatively weak external stimulus may elicit a particular train of thought which, through its associative connections, activates further ideational contents capable of generating strong emotional responses. By interrupting this associative sequence in its early stages, the occurrence of thought-produced arousal may be forestalled altogether.

Assuming that symbolic activities obey the same psychological laws as overt behavior, it should be possible to influence significantly the nature, incidence, and potency of covert events. The difficulties in detecting the presence of implicit responses present a major obstacle to

their control by reinforcement practices if one adheres to the conventional paradigm in which an external agent monitors the occurrence of the desired behavior, imposes the contingencies, and administers the reinforcers. However, as Homme (1965) points out, the occurrence or absence of covert events can be easily and reliably detected by the person doing the thinking. Consequently, such responses are most readily conditioned through *self-reinforcement operations*. In this type of approach implicit responses are self-monitored, the contingencies are self-prescribed, and the consequences self-produced.

Homme suggests that Premack's (1965) differential-probability hypothesis (i.e., any highly preferred activity has reinforcing capabilities) might be utilized to good advantage in the contingency arrangement and selection of self-reinforcers. That is, the strength and incidence of

certain classes of thoughts can be increased by making preferred activities contingent upon their occurrence. Presumably depressive, infuriating, and other vexatious ruminations could be displaced by self-reinforcement of more constructive lines of thought. However, in view of the dearth of information regarding the conditionability of implicit events, development of efficacious treatment methods must await thoroughgoing analysis of thought control processes as influenced by external or self-monitored reinforcement operations, by attentional changes, and by other self-manipulable factors.

### **Discrepancy between Response Systems and the Unconscious**

The discussion thus far has emphasized cognitive control of autonomic and instrumental behavior under conditions where both the



environmental stimulus supports and the reinforcing events are easily recognizable. Of equal interest, particularly for theories of personality, is the observation that persons sometimes display discriminative autonomic or motor responsiveness without conscious recognition of eliciting stimuli that are too weak for reliable identification. Traditional explanations of such phenomena have tended to invoke a potent psychic entity in the form of an “unconscious mind” which supposedly possesses sensitive discriminating capacities. According to this interpretation, the unconscious mind readily perceives threatening stimuli which occur below the level of awareness, and the ego mobilizes various defensive mechanisms to cope with them and keep them out of awareness.

Considerable research has been conducted over the years, principally by Eriksen (1958,

1960), to evaluate the empirical status of subliminal discrimination and conditioning. Results of these rigorously designed investigations, along with other findings, lend support to an alternative conception of the characteristics of unconscious processes.

In the typical paradigm subjects are presented a series of neutral and negatively valenced visual stimuli at about threshold value, and observers' nonverbal responses (autonomic or motor), as well as verbal responses to the stimuli, are recorded concurrently. A major controversy arose in connection with evidence originally reported by Lazarus & McLeary (1951) that subjects frequently displayed conditioned autonomic responses to aversive stimuli in the absence of correct verbal recognition of the stimulus sequence. The authors interpreted these data as demonstration of unconscious discrimination.

Although the findings were not disputed, their explanation as support for the existence of a “subception” process was vigorously challenged by Eriksen (1958) and Goldiamond (1958) on methodological grounds.

In studies of this sort, the definition and method of establishing thresholds provide one major source of error. In most instances the threshold is defined as the stimulus value at which verbal recognition is about 50 percent correct. Hence, a subject can, in fact, discriminate at better than chance level a stimulus below the arbitrary statistical threshold. Therefore, occurrence of conditioned autonomic responses at slightly better than chance expectancy does not represent a compelling demonstration of unconscious discrimination. Of much greater significance is evidence (Eriksen, 1960) that subliminal conditioning or discrimination rarely occurs when

the relevant stimuli are below recognition level.

A second methodological problem arises because verbal reports can be influenced by nonsensory factors. Subjects are generally reluctant to admit the presence of a faint stimulus when they are unsure, a negative response bias that is likely to raise the verbal threshold artifactually. A cautious person would obtain a verbal threshold much higher than is, in fact, the case, thus producing a large, spurious subliminal effect. Feigned nonrecognition is most likely to occur when subjects are presented socially censured content such as taboo sexual words.

In addition to the influence of propriety and subjective confidence upon verbal reports, verbal responses do not convey the finer discriminations made by subjects when they are required to classify their perceptual experiences in terms of a

few discrete verbal categories. Pseudo-subliminal effects may arise from the differential accuracy of continuous autonomic responses and discrete categorical responses at the verbal level. The fact, however, that discrepancies in response systems exist even when subjects are allowed a more refined set of verbal responses, and motor responses are substituted for an autonomic measure (Eriksen, 1957), indicates that discriminative behavior can occur without accurate verbal labeling of the relevant stimulus events.

As Eriksen points out, the question of whether a more sensitive discriminatory mechanism exists at an unconscious level can be answered most directly by comparing the thresholds of different response systems. This procedure involves conditioning an autonomic response to a supraliminal stimulus and then comparing the

incidence of accurate verbal recognition and concurrent autonomic responsiveness to the stimulus presented above and below threshold. Using this method, along with a verbal response measure that controlled for negative reporting bias, Dulany & Eriksen (1959) found that physiological and verbal response systems were equally insensitive to low stimulus values, but verbal response was the superior discriminator at intermediate and high levels of stimulation.

Although the above findings provide no evidence for unconscious responding to threatening stimuli too weak to produce awareness, nevertheless discrepancies between simultaneous responses to environmental cues do occur and hence require explanation. The latter phenomenon, rather than being attributed to the regulating influence of egos, superegos, or other psychic agents operating within an unconscious

mind, can perhaps be more plausibly and parsimoniously conceptualized in terms of discrepancy between partially independent response systems, a view for which Eriksen provides considerable empirical support.

When two responses appear more or less concomitantly with a series of sensory stimuli, the nature of the relationship between these events remains obscure. It may be that conscious recognition of threatening stimuli evokes the autonomic responses; the occurrence of discriminative autonomic responses may produce correct verbal recognition; or the two modes of response may be elicited independently by the environmental stimulus. In an effort to unravel the relationships among variables in "subception" studies, Eriksen conducted a series of experiments in which verbal recognition responses and concurrent motor or autonomic responses were

each correlated with the eliciting stimuli, with the influence of the concomitant response variable partialled out statistically. By this method of analysis it is possible to determine what relationship, if any, exists between autonomic responses and sensory stimuli when differences in awareness are eliminated. Results of these experiments consistently show that verbal and autonomic modes of behavior represent parallel response systems that are both reactive to sensory stimulation and are partially independent of each other. The findings furthermore provide no evidence that persons respond autonomically or motorically in a more sensitive and accurate manner than they do at the conscious verbal level.

Variables that affect symbolic, physiological, and motor response systems differentially would be expected to reduce the degree of correlation between different classes of reactions. To the



extent that certain factors impair the accuracy of measurement of one class of behavior without affecting another, response disparities will obtain even though the two systems are, in fact, highly congruent. Extraneous variables are most likely to exercise a high degree of control when persons are responding to stimuli that are too weak to override the effects of more salient characteristics of the situation.

Genuine disparities among different classes of behavior can be produced through the application of differential reinforcement. Thus, if hostile thoughts and verbalizations are approved or permissively accepted but overt aggressive actions are consistently punished, persons will readily verbalize aggressive feelings without exhibiting any of their motor equivalents. Similarly, by reversing the reinforcement contingencies one could effectively inhibit cognitive representations

of behavioral manifestations. It should likewise be possible to produce other patterns of correlations by varying systematically the contingencies of reinforcement into which the responses enter.

Most of the material in the preceding sections treats unconscious phenomena as internal and environmental events which are not represented in awareness. Some theories, however, consider it important to distinguish between the preconscious and the unconscious. In this distinction the preconscious comprises mental elements which are readily accessible to consciousness by directing the subject's attention to them. On the other hand, the unconscious includes elements which are relatively inaccessible to awareness and which can be made conscious only by removing strong resistance, preferably through interpretive treatment.

In view of the questionable validity of psychotherapists' speculations about unconscious contents, accessibility to consciousness, as inferred from degree of resistance, is an exceedingly unreliable criterion upon which to build a structural theory of mental functioning. If an individual refuses to acknowledge certain thoughts or impulses suggested to him by his therapist, the question remains whether the resistance reveals repressed contents or justifiable incredulity in the face of erroneous interpretations. For example, it would be a mistake to conclude that a person who vigorously opposed interpretations that certain of his deviant behaviors represented derivative manifestations of a clandestine and powerful "zoognick," did in fact possess an unconscious "zoognick" held in check by strong repressive forces. As noted earlier, when the interpretive process is viewed from a

framework of social influence, the degree of opposition shown by clients, and the amount and type of elements which eventually emerge from their hypothesized unconscious depend, in large part, upon psychotherapists' prestige, credibility, belief systems, and other extraneous factors.

Although one might seriously dispute whether the existence of unconscious psychic events can be reliably established through psychotherapeutic methods, there is no doubt that thoughts and other implicit activities can be effectively inhibited. Thought inhibition is traditionally attributed to the mechanism of repression, which is believed to operate largely at unconscious levels. It is further assumed, particularly in psychoanalytic formulations, that repressed elements not only maintain a dynamic life of their own, but are charged with a cathexis of drive energy which continuously presses for discharge

either directly or in derivative form. Opposing psychic agents which assume defensive and prohibitive functions maintain the repression by expending a portion of the psychic energy at their disposal.

In behavior theory the phenomenon ascribed to repression is conceptualized in terms of processes of avoidance conditioning. If certain thoughts are repeatedly associated with painful experiences, they gradually become endowed with aversive properties. Since thoughts are private events, they can be affected only indirectly by reinforcing operations. One way in which this might come about is through the process of response generalization. For example, the experiment by Miller (1951), which was discussed earlier, demonstrated that anxiety attached to a spoken word tends to generalize to the thought of the word. Also, since thoughts typically precede or

accompany overt responses, implicit events may acquire the capacity to arouse anxiety through their close temporal proximity to punished instrumental acts.

Once certain thoughts come to function as conditioned aversive stimuli, their occurrence generates anxiety and their elimination allays it. As shown in the experiment by Eriksen & Kuethe (1956), inhibition of anxiety-provoking thoughts is usually achieved through simultaneous occurrence of competing ideational activities. Students were asked to associate to a series of words, and they were punished by electric shock every time they responded with associations given initially to five arbitrarily selected words. Punished associations declined rapidly, whereas nonpunished word associations remained unchanged as items were repeated. Some indications that punishment eliminated responses

at the implicit level rather than merely produced deliberate word substitution are shown by the fact that replacement of initially dominant associates occurred in students who were unaware of the basis for shocks or that their associations had changed; the inhibitory effects also persisted on a somewhat different association task in which the threat of aversive stimulation was removed.

In social-learning interpretations of repression, incompatible responses rather than psychic agents are considered to be the inhibitory forces. It should also be noted that the various mechanisms of defense are defined, for the most part, by the characteristics of the behavior that competes with and supersedes negatively valenced tendencies. For example, if a person who is instigated to hostility exhibits positive thoughts and actions toward the thwarting agent he is engaging in reaction formation; if he should

become irritated at a blameless person he is exhibiting displacement; if he avoids unpleasant thoughts by becoming preoccupied with competing ideational content and attendant rituals he is resorting to obsessive-compulsive defenses.

Social-learning theory not only makes no appeal to prohibitive psychic agents in accounting for the inhibitory process, but it differs from psychodynamic approaches also in the assumptions made about the nature of inhibited response tendencies. While formerly punished responses may retain their capacity to generate emotional effects if they are activated, it is not assumed that they lead a dynamic existence within an unconscious mind, that they possess a drive energy which must be reduced periodically, that they press continuously for discharge in one guise or another, or that they require unceasing restraint to confine them in the unconscious



domain. Rather, it is assumed that inhibited behavior propensities remain inert unless activated by appropriate stimulation. Under circumstances where the incompatible controlling responses to the same stimuli are clearly dominant and therefore readily evoked, the punished behavior is unlikely to reach even the incipient level. On the other hand, when punished responses are strongly established and competing tendencies are not completely dominant, inhibited responses may be aroused to the point where they generate conflict and anxiety. A repressed element, according to this view, does not have a qualitatively different nature from any response that has been superseded by an alternative pattern of behavior.

Apart from its more secure empirical status, the concurrent response system model has many advantages over formulations which assume the

existence of an unconscious mind. The former conceptualization does not lend itself to pseudo-explanations in which a descriptive label for response disparities is reified and assigned causal properties—for example, discrepancy between symbolic and motor or physiological responses to the same stimulus events is given the descriptive label of “unconscious,” which is then converted into an internal agency that exercises powerful control over behavior. The multiple-response-systems interpretation of phenomena designated as unconscious also encourages systematic exploration of the variables which give rise to response disparity. Finally, the theory has important treatment implications. Given the existence of independent but partially correlated modes of response to significant stimuli, the psychotherapist can profitably concentrate his efforts on direct modification of the classes of

response that the treatment is designed to alter, rather than embarking on a protracted search for unconscious causative agents that one can predict in advance will prove to be highly concordant with the therapist's particular theoretical predilections.

### *COGNITIVE EFFECTS OF SUBLIMINAL STIMULATION*

The studies reviewed in the preceding section investigated unconscious phenomena mainly in terms of discrimination of weak stimuli. Klein and his collaborators (Klein, Spence, Holt, & Gourevitch, 1958; Spence, 1964; Spence & Holland, 1962) have employed a somewhat different approach to the problem. The effects of subliminal stimulation are measured, not on autonomic or recognition responses, but in terms of indirect indicators of cognitive changes.

In most of these experiments neutral rather than threatening stimuli are presented at levels

which apparently are sufficiently intense to register and evoke some response in the central nervous system, but the sensory input is either too faint or too brief to produce full recognition or correct identification of the stimulus events. In other studies a verbal stimulus, which is presented briefly well above identification level, is imbedded in other competing stimuli and, therefore, may not be recalled even though it has been fully registered. Numerous indirect measures of unconscious activation have been employed, such as the inclusion of similar stimulus elements in fantasy production (e.g., stories given to projective tests, drawing, dreams); increased tendency to give related responses to items in a word-association test; cognitive elaboration of a neutral stimulus in terms of the affective tone of preceding subliminal cues; and arousal of responses belonging to the same associative network.

Two conflicting hypotheses have been proposed regarding the characteristics of subliminal stimulation. According to the continuity view of perceptual processes, the effects of subliminal stimuli are similar to those of recognized stimuli; since the magnitude of influence varies with the intensity of input, however, the former are less potent. The opposing theory, on the other hand, assumes that the effects of subliminal stimulation are more diffuse and pronounced than those produced by supraliminal stimuli because, in the former case, the restricting effects of consciousness upon thought are removed. This formulation, which was originally advanced by Freud (1953), assumes that preconscious and conscious influences obey different laws, with stimuli which operate outside of awareness being less bound by logical and reality-oriented controls.

These alternative views cannot be evaluated empirically because it has yet to be reliably demonstrated that subliminal stimulation does in fact influence cognitive activities to any appreciable degree. Research of this type is plagued by even more difficult methodological problems than the approaches to unconscious phenomena reviewed earlier. As was true of the research on “perceptual defense,” the question of whether one is dealing with a genuine phenomenon or with a methodological artifact is of continuing concern. Interpretations of findings always remain in doubt because subjects who display subliminal effects may be partially aware of the stimulus patterns before reporting them so that the stimulation is actually at or above recognition threshold. Since subliminal stimuli rarely appear in cognitive performances in direct form, investigators must search for indirect,

distorted, or remote symbolic representations in order to obtain at least a few scorable responses for most subjects. To complicate matters further, no objective criteria are available for identifying distorted or transformed representations, and high inter-scorer reliability is often difficult to achieve.

Even if one includes the altered guises that unrecognized sensory input presumably takes, the effect of subliminal stimulation upon cognitive functioning is exceedingly weak and, in some cases, it is wiped out completely when sources of artifact such as associative clustering effects are controlled (Worell & Worell, 1966), and base rates of indirect manifestations are obtained from subjects who have never been exposed to the subliminal stimuli (Johnson & Eriksen, 1961). It would appear from the elusive and scanty yield of research in this area that subliminal activation

must play a relatively inconsequential role in regulating human behavior. Whereas recognizable stimuli assume a powerful behavior-directing function, nonrecognized stimuli have, at best, weak, inconsistent, and fragmentary psychological effects.

## **Attitudinal Consequences of Behavioral and Affective Changes**

### *RELATIONSHIP BETWEEN ATTITUDINAL AND BEHAVIORAL CHANGES*

In most instances change agents who strive to alter people's attitudes are not interested in attitudes per se. Although the influence procedures are designed to change evaluations and preferences concerning certain persons, commodities, or activities, the principal aim is to modify behavior. Thus, for example, the intent of persuasive efforts is to get people to buy particular brands of merchandise, to vote for



certain candidates, to engage in or to abandon smoking, or to pursue various other courses of action. The attitude-change approach is selected as a means of influencing behavior when the desired behavior cannot be directly elicited and reinforced for practical or other reasons.

It is widely assumed that attitudes are important determinants of overt actions and consequently that any changes brought about in the attitudinal domain will have widespread effects upon subsequent behavior. It is further believed that altered response patterns that are accompanied by correspondingly altered attitudes will be more stable over time than behavior that is induced directly without cognitive supports. For these and other reasons, the development of beneficial attitudes is often regarded as a major objective of social change endeavors. If it is demonstrated that attitudinal changes do, in fact,

have significant behavioral consequences, it would be of considerable import to devise efficacious procedures that might be specifically directed toward the modification of attitudes.

A voluminous literature has accumulated over the years concerning attitude change through exposure to persuasive communications, which, because of their extensive mass application, constitute the prevailing influence technique explored in this field. Considering the multitude of publications and the powerful controlling functions assuredly conferred upon attitudes, it is surprising to find that a thorough search of this literature by Festinger (1964) yielded a dearth of studies in which the influence of attitude change upon behavior had been specifically investigated. Nor has the yield of pertinent studies increased noticeably in more recent years. The available data, though admittedly meager, disclose that

changes in attitudes produced by persuasive communications generally have little or no effect upon overt actions (Fleishmann, Harris, & Burt, 1955; Levitt, 1965; Maccoby, Romney, Adams, & Maccoby, 1962). In contrast to these findings, Greenwald (1965a) reports a positive, but low, correlation between attitudinal and behavioral changes. However, for subjects who express a prior commitment counter to the influence attempt, persuasive communications alter attitudes but produce no significant change in behavior (Greenwald, 1965b). These apparently conflicting results may partly reflect differences in the nature and importance of the behavior undergoing change, the time elapsing between assessment of changes in attitudes and behavior, and the order in which these two sets of events are measured. There is some reason to expect (Cohen, 1964) that changes in these two forms of response

will be more highly correlated when attitudes are measured following, rather than prior to, performance of discrepant behavior.

The failure to obtain consistent and high relationships may be interpreted in several ways. It is possible that responses to questionnaires and self-ratings, which constitute the dependent variables in most social- psychological research, are unreliable indicants of people's actual opinions and attitudes. It has been shown (Schanck, 1932), for example, that privately held attitudes often differ markedly from those that are publicly espoused. Persuasive communications may thus elicit compliance to implied situational demands without significantly affecting people's private attitudes.

A second explanation, suggested by Festinger (1964), is that attitudinal changes resulting from

persuasive influences are relatively unstable and will, therefore, disappear unless the corresponding overt behavior is sustained by adequate consequences. This view assumes that attitudes produce temporary performance changes; however, when environmental contingencies do not support the new activities individuals revert to their old behavior and the newly established attitudes are similarly altered to coincide with the actions.

The relative modifiability of attitudes and actions, and the degree of correspondence obtained between changes in these two sets of events, may vary with the affective and social consequences accompanying the behavior. A given social influence might produce analogous changes in both attitude and action when persons are indifferent to, or favorably disposed toward, performing the advocated activities. Most

attempts to control consumer behavior through persuasive communications would fall in this category. Thus, for example, a person who is considering purchasing a television set may be prompted to buy an expensive color console after being convinced by persuasive commercials that it provides more pleasurable viewing than a black-and-white set. The process is more complicated, however, when persons resist advocated behavior that they can perform because it results in self-devaluation. This is illustrated by situations in which people are induced to behave in ways that conflict with their beliefs. Obstacles to change also arise when individuals are amenable to engaging in desired activities but are unable to do so because of strong fears and inhibitions. In the latter instances, a weak method may alter responses that are readily susceptible to change, such as verbal evaluations, but fail to modify overt

behavior that is rendered intractable by its adverse consequences. A relatively powerful influence would be required to achieve correlative changes in different types of response systems. Unlike the inconsistent effects of persuasive communications, desensitization and modeling approaches are capable of producing correlated changes in refractory behavior and attitudes. These positive relationships range from  $r = .39$  when changes in attitudes are measured by the semantic differential technique to  $r = .59$  and  $r = .72$  for change scores based on a variety of attitude scales (Bandura, Blanchard, & Ritter, 1969; Blanchard, 1969).

Correlated changes, when they do occur, may reflect the operation of several different mechanisms. According to most contemporary attitude theories, some of which will be reviewed later, there is a drive to maintain consistency

among beliefs, feelings, and actions. A change in any one of the components will, therefore, engender congruous modifications in the other constituents. In these consistency models, changes in attitudes or behavior are treated, not as consequent events, but as causal variables that affect other forms of behavior. An alternative interpretation is that environmental influences have similar but independent effects on feelings, beliefs, and behavior. In this view, consistencies of belief and behavior represent correlated coefficients rather than outcomes of a process in which modification of one type of behavior produces changes in other forms of responding.

Definitive tests of the parallel effects and consistency explanations of change processes are precluded by the absence of a methodology that would permit simultaneous measurement of beliefs, affect, and actions. If incongruity creates



an internal stimulus for psychological change then a sequential testing procedure confounds the effects of external influences and the consistency drive. Conversely, a given environmental influence could have similar consequences on different classes of response that would be erroneously ascribed to the operation of a consistency drive. These alternative formulations perhaps should be regarded as complementary rather than conflicting. Under most conditions, powerful stimulus events produce diverse psychological changes, and performance of new behavior is likely to have additional cognitive and emotional consequences.

In many respects, the question of whether attitudes regulate overt behavior might be considered a pseudo-issue created by arbitrary distinctions between different types of response. An attitude is variously defined as a disposition to

behave favorably or unfavorably toward a given object (Brown, 1965); an organization of valenced cognitions combined with a predilection for motive arousal (Newcomb, Turner, & Converse, 1965); an affective evaluative response toward an object (Rosenberg, 1960); or an implicit anticipatory mediating response (Doob, 1947). Like most implicit tendencies, attitudes are characteristically inferred from various forms of overt behavior rather than identified by some independent criterion. Consequently, if self-ratings were treated as a class of behavior rather than assigned special status as indicants of an internal mediator which is given substance and endowed with influential regulatory powers, then the issue of the relationship of attitude to behavior might be more meaningfully conceptualized as a problem of correlation between different response systems. From this point of view, there exists no intrinsic

relationship between these two sets of responses, since they can be either highly correlated or dissociated depending upon their respective contingencies of reinforcement.

The differentiation between attitudes and overt actions disappears completely when the former are primarily inferred from nonverbal behavior, as is generally the case in interpretations of naturalistic phenomena. For example, a person who displays antagonistic responses or actively avoids members of a given ethnic group is believed to have a negative attitude, whereas he is assumed to possess a positive attitude if he exhibits approving amicable reactions. In such circumstances, the issue of whether attitudes influence behavior reduces to the meaningless question of whether a particular response pattern determines itself!

It should be emphasized that the foregoing discussion is not intended to minimize the role of symbolic mediators in human functioning, but rather to call attention to the conceptual difficulties created by a lack of independent measures of covert tendencies designated as attitudes. As a result, it is often difficult to ascertain whether investigators are dealing with superfluous abstractions from behavior, with coeffects of operations of social influence, or with causally related events.

Much of the ambiguity that prevails in this field might be reduced and the theoretical issues more precisely delineated if the indeterminate concept of "attitude" were abandoned altogether. Rather, the basic issue posed earlier might be rephrased as follows: To what degree, and under what conditions, do changes brought about in either cognitive, affective, or motor classes of behavior

have reciprocal effects? It might be argued that there would be some value in retaining the attitude construct, apart from its shorthand labeling function, if it were used to represent the higher organization processes that are inferred from specific behavioral manifestations. However, in view of the substantial evidence (Bandura & Walters, 1963; Mischel, 1968) that human behavior is markedly specific and extensively regulated by discriminative cues, reinforcement contingencies, and other external events, there is reason to question the utility of theoretical formulations that invoke unitary mediators that cannot possibly serve as determinants of heterogeneous responses that are not intercorrelated to any appreciable degree.

In an effort to account for behavioral specificity within an attitude theory framework, Rokeach (1966) has advanced the view that social

behavior is determined by sets of interacting attitudes—one activated by the attitude objects, and the other elicited by the situation. He rightfully argues that in many instances situational influences, which have been neglected in attitude theory, may outweigh the response-eliciting effects of the attitude object. Hence, individuals often display quite different attitudes toward the same attitude object in different social situations. A theory that predicts attitudinal responses on the basis of both subject and situational variables would undoubtedly have greater predictive power than one relying solely on subjects' evaluations of the attitude object in undefined contexts. The controlling properties of situations primarily reflect differences in reinforcement contingencies as they apply to attitudinal behaviors expressed in diverse social contexts. One might achieve even greater predictive efficacy by treating attitudes as

evaluative responses that are under reinforcement and discriminative stimulus control, as is any other form of behavior.

## **Strategies of Attitude Change**

### *BELIEF-ORIENTED APPROACH*

Three general approaches can be employed either singly or in various combinations to induce attitudinal changes. The informational or belief-oriented approach attempts to effect modifications in people's attitudes by altering their beliefs about the attitude object through exposure to various forms of persuasive communications. It is assumed that people can be induced to change their evaluations of an attitude object by presenting them with new information about its characteristics.

Most of the research generated by this informational approach (Cohen, 1964; Hovland &

Janis, 1959; Hovland, Janis, & Kelley, 1953; Rosenberg et al., 1960) has been expressly designed to isolate the conditions under which a given communication will have its maximal effect upon recipients' attitudes. Three general sets of variables, namely the nature of the communicator, the communication, and the recipients, have been most extensively investigated. Studies of the persons being influenced have generally been concerned with their personality characteristics, the level of their intelligence or sophistication, the nature of their pre-existing attitudes, and the strength of their commitment to a given position. The effects of communicator variables in enhancing attitudinal modification are typically analyzed in terms of attributes such as expertness, trustworthiness, prestige, impartiality, social power, and concealment of the persuader's manipulative or propagandistic intent. The form



and organization of persuasive arguments, which can also significantly influence attitude formation and change, involves such matters as the optimal order of presenting weak and major arguments, the sequence of supporting and opposing arguments, the degree of explicitness with which conclusions are stated, the amount of repetition, the degree of discrepancy between the subject's views and the ones advocated, the affective properties of the contents, and whether the influence program relies upon a one-sided presentation or also includes some consideration and refutation of counterarguments. Research findings show that the effects of these different variables rarely produce simple effects; rather their direction and magnitude are dependent in part upon the simultaneous influence of other factors. For example, the amount of attitude change may increase as a direct function of degree

of discrepancy of opinions advocated by a highly respected source, whereas a less credible persuader may exert a decreasing influence the more divergent his opinions (Aronson, Turner, & Carlsmith, 1963; Bergin, 1962). To complicate matters further, a given variable may have differential immediate and long-term effects upon attitudes. With the passage of time, relevant content may be retained but the source forgotten, thus reducing initial credibility influences (Hovland & Weiss, 1951; Hovland, Lumsdaine, & Sheffield, 1949; Kelman & Hovland, 1953).

Most of the preceding investigations of persuasive communications have been primarily guided by a set of empirical principles rather than a systematic theory. However, these principles are organized around the basic assumption that attitude change is governed to a large extent by anticipations conveyed through communications

of rewarding and punishing consequences for certain courses of action. A competent or prestigious communicator is generally more influential than a less competent one because the former's behavioral recommendations, if executed, are more likely to result in favorable outcomes. As noted below, the content of communications often includes incentive references or is expressly designed to alter the valence of the attitude object.

Although belief changes can be induced by exposure to communication stimuli, there is little evidence that mere presentation of information about the attitude object alters people's behavior toward it to any great extent. Higher-order conditioning processes are therefore frequently employed to augment the potency of persuasive communications. One method, which relies upon the phenomenon of vicarious reinforcement, increases the likelihood that an observer will

respond in the recommended manner by depicting reinforcing consequences accruing to a performing model. In positive appeals, performance of the behavior suggested by the communicator results in a host of rewarding effects. Thus, smoking a certain brand of cigarettes or using a particular hair lotion wins the loving admiration of voluptuous belles, enhances job performance, masculinizes one's self-concept, actualizes individualism and authenticity, tranquilizes irritable nerves, invites social recognition and amicable responsiveness from total strangers, and arouses affectionate reactions in spouses. Laboratory studies (Bandura, 1968) disclose that, according to their nature, depicted consequences to a performer not only facilitate or inhibit response tendencies, but their effects may outweigh the previously acquired value system of the viewers (Bandura, Ross, & Ross, 1963).

Negative appeals, on the other hand, portray the adverse consequences which result from failure to comply with a communicator's behavioral recommendations. Although vicarious punishment may inhibit existing response dispositions to some extent, it is a less reliable procedure for producing desired attitudes and corresponding patterns of behavior. Display of noxious or revolting outcomes tends to arouse strong emotional responses which may give rise to avoidance of disturbing material and associated recommendations (Janis, 1967) or endow the attitude object itself with negative valence.

Belief changes achieved by persuasive arguments may temporarily increase the likelihood of advocated courses of action, but it is doubtful that this type of approach can by itself produce enduring effects unless favorable incentive conditions, which govern persistence of

induced changes, are arranged as well. That is, if a person were to act on his beliefs, the effects of adverse outcomes would eventually negate the influence of persuasive communications. An uncomely brunette, for example, who has been persuaded that “blondes have more fun” may dye her hair a flaxen tint, but if her dismal dating plight should remain unchanged she is likely to discard the belief and revert to her natural hue.

Some research indicates that susceptibility to counterinfluence and rate of extinction of newly established beliefs can be temporarily attenuated by preparatory communications (Janis & Herz, 1949, cited in Hovland, Janis, & Kelley, 1953; McGuire, 1964). These serve to stimulate rehearsal of refutations of opposing arguments or to instill expectations in recipients that although they will at first encounter failure experiences and other adverse outcomes, if they adhere to their

convictions they will eventually achieve success. A person who has been led to anticipate unfavorable initial outcomes may discount subsequent failures for a time. However, where discrepancies exist between assumed and actual schedules of reinforcement, both his behavior and his beliefs probably will gradually adjust to existing reinforcement conditions.

Because of ease of application, persuasion techniques presented through verbal or pictorial devices are widely employed on a mass basis in efforts to control consumer behavior, to influence voting choices, and to indicate either positive or negative evaluative responses toward particular attitude objects and social issues. The efficacy of mass persuasion methods is often diminished, however, by the limited control that influence agents can exercise over people's attention to communication stimuli, and by lack of direct

means of immediately reinforcing the audience members for performing the recommended behavior. On the other hand, under conditions where selected communication stimuli are capable of attracting and holding viewers' attention and the advocated actions do, in fact, result in favorable consequences, mass appeals may initiate lasting changes in people's beliefs and behavior.

#### *AFFECT-ORIENTED APPROACH*

A second general strategy for inducing attitudinal changes involves an affect-oriented approach. In this paradigm, both evaluations of, and behavior toward, particular attitude objects are modified by altering their affective properties. These emotional changes are typically achieved through procedures based upon the principle of classical conditioning. As shown in preceding chapters, attitudinal and behavioral reversals can



be produced by contiguous association of objects that are highly positive in valence with noxious experiences in aversive forms of counterconditioning, or by pairing subjectively distressing stimuli with positively reinforcing events in desensitization operations. The most convincing demonstrations of transfer effects of emotional reconditioning are furnished by studies in which the affective properties of attitude objects are independently measured, usually in terms of appropriate physiological indices, with adequate controls for nonspecific social influences (Marks & Gelder, 1967).

Although the use of association principles to facilitate attitudinal changes has been widespread, there has been surprisingly little research into the effectiveness of this approach. There is some evidence that evaluative responses can be altered by presenting persuasive messages or objects

contiguously with appetizing foods (Janis, Kaye, & Kirschner, 1965; Razran, 1938), unpleasant odors (Razran, 1940), or sexually arousing stimuli (Smith, 1968). In an effort to determine whether extraneous gratification facilitates attitudinal change by a conditioning mechanism or by creating a positive attitude toward the donor, Dabbs & Janis (1965) compared the attitudinal effects of food consumption occurring contiguously or noncontiguously with exposure to persuasive messages under two different endorsement conditions. For half the subjects the experimenter positively endorsed the messages while for the remaining subjects he personally disagreed with the conclusions advocated by the communication. Neither the contiguity nor the endorsement variable alone produced a significant effect, but contiguous food combined with positive endorsement increased acceptance of unpopular

opinions. These findings, however, must be accepted with reservation because attitude measures are of questionable validity when obtained by the same person who positively or negatively endorses the opinions being rated.

In naturalistic influence situations the method that is most frequently employed to induce changes in the affective value of an object involves higher-order associations of symbolic stimuli. In this procedure, the names and attributes of attitude objects are paired with verbal stimuli or pictorial presentations likely to evoke in listeners strong emotional responses on the basis of prior first-order conditioning. In several laboratory investigations of this learning process (Insko & Oakes, 1966; Staats & Staats, 1957), formerly neutral nonsense syllables have been contiguously associated with emotionally toned adjectives. The syllables take on negative valence through

repetitive pairings with adjectives having negative connotations (e.g., ugly, dirty), whereas these same items are evaluated as pleasant after they have been associated with positively conditioned words such as beautiful, tasty, and happy. Pre-existing attitudinal responses toward familiar names of persons and nations have also been significantly altered through conditioning methods utilizing emotional words as the evocative stimuli (Staats & Staats, 1958).

A study by Das & Nanda (1963) further reveals that developed conditioned evaluative responses tend to generalize along previously established associative networks, thus resulting in widespread effects. After nonsense syllables had been contiguously associated with the names of two aboriginal tribes, favorable and unfavorable attitudes were developed toward the syllables. In a subsequent test subjects ascribed positive and

negative attributes to the tribes in accordance with the evaluative responses conditional to their corresponding nonsense syllables.

It should be noted in this context that, unlike laboratory analogues of attitudinal learning in which single emotional words are presented in discrete trials, in real-life situations considerably more intense emotional reactions are typically elicited in audiences by the cumulative impact of long series of emotionally toned descriptions or pictorial presentations.

The above studies, though relevant to the issue of attitudinal modification through affective manipulations, would have greater implications had they included more extensive assessment of emotional changes. Of much greater import would be evidence that exposure to communication stimuli does, in fact, endow attitude objects with

emotion-arousing properties, and that alterations in the affective domain are associated with corresponding changes in individuals' overt behavior toward the objects in question.

Another method of inducing affective changes that have considerable behavioral consequences relies upon modeling processes (Bandura, 1968). This outcome is achieved by associating attitude objects or their descriptions with affective modeling cues capable of arousing in viewers analogous emotional responses. Attitudinal modification through modeling is illustrated in an ingenious experiment by Duncker (1938). In an initial test of food preferences children chose powdered chocolate with a pleasant lemon flavor over a very sweet sugar with a disagreeable medicinal taste. Later, a story was read to the children in which a stalwart astute hero abhorred a sour-tasting foodstuff similar to the children's

preferred food and enthusiastically relished a sweet-tasting substance. The reactions of the admired hero reversed the children's initial food preference, as measured immediately after the story session and in six successive tests in which the children chose between powdered chocolate and medicated sugar. Moreover, brief recall of the story reinstated the experimentally induced preferences that had declined gradually over time. More recently, Carlin (1965) found that young children showed a greater preference for deferred gratification after they saw an adult model display positive affective reactions while waiting for delayed rewards than they did after they observed the model express negative emotional reactions and devalue the goal object during the imposed delay period.

In the foregoing studies both evaluative judgments and emotional responses were

modeled. The observed changes therefore cannot be attributed solely to the influence of affective modeling cues. There is some reason to believe from evidence provided by Culbertson (1957) that the modeling of preferences and beliefs without strong affective displays can alter attitudes. Observers who witnessed others express favorable attitudes toward integration subsequently exhibited a decrease in prejudicial attitudes.

The potency of modeling for inducing attitudinal changes is further demonstrated in the experiment by Bandura, Blanchard, & Ritter (1969) that was previously described. Snake-phobic subjects were administered eight evaluative dimensions of the semantic differential technique, and six attitude scales on which they rated how much they would like or loathe different types of encounters with reptiles.



Subjects were then given factual information about the characteristics and habits of snakes in order to control and to assess the possible influence of incidental information before any treatment procedures were applied. After the test for snake avoidance behavior, the attitude measures were again administered. In the next phase of the experiment subjects received either systematic desensitization, symbolic modeling, live modeling combined with guided participation, or no treatment. Following completion of the treatment series the attitude measures were again administered prior to, and immediately after, the snake avoidance test.

The results are summarized graphically in Figure 9-6. Subjects' loathing of reptiles was not altered in the slightest by factual information and exposure to the test snake. The refractory quality of these negative attitudes is further shown by the

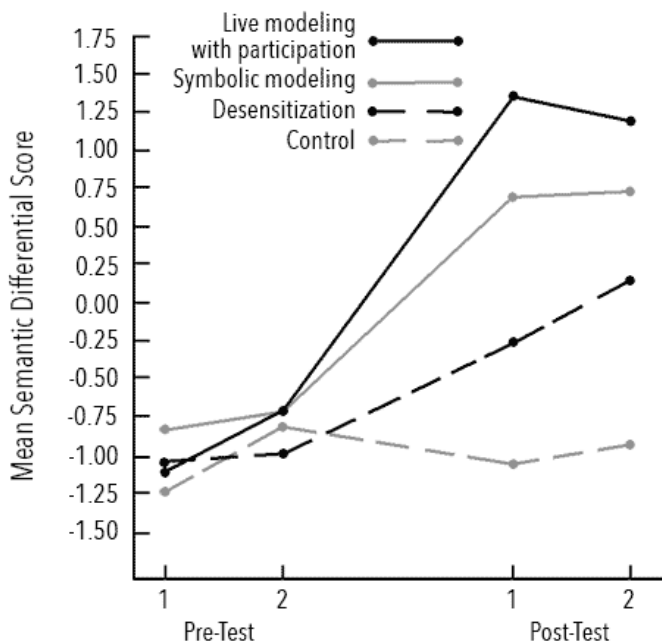
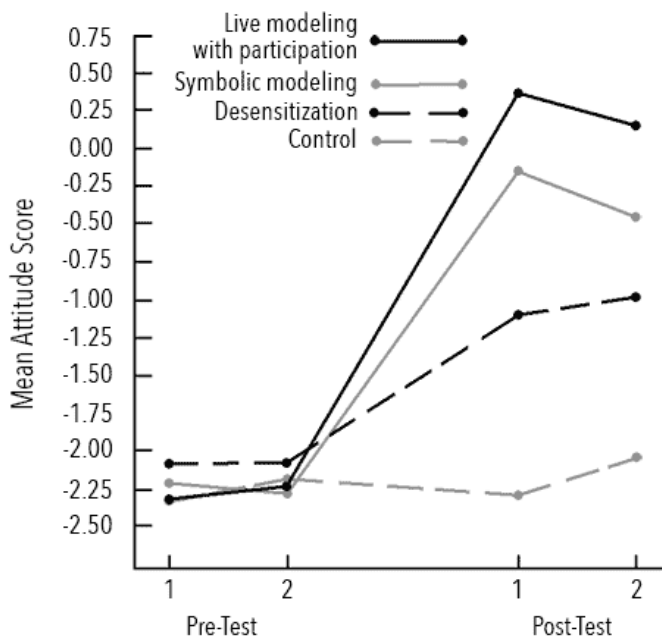


Figure 9-6. Attitudinal changes for subjects who received either one of the three treatment procedures or served as untreated controls. The numeral 1 indicates subjects' attitudes prior to the behavioral test, and the numeral 2 shows their attitudes immediately after the test of avoidance behavior. Bandura, Blanchard, and Ritter, 1969.

control subjects, whose evaluative reactions remained unchanged across repeated assessments. Both symbolic modeling and desensitization, which successfully extinguished negative emotional responses to snake stimuli, produced extensive attitudinal changes. The treatment condition that neutralized the anxiety-arousing properties of snakes and enabled subjects to interact with the repugnant attitude object without any adverse consequences achieved the greatest modification in attitudinal behavior. In a study designed to assess the relative influence of information, modeling, and guided contact in the latter method, Blanchard (1969) found that modeling accounted for approximately 80 percent of the attitude change. Information, on the other hand, increased subjects' emotional arousal to modeling displays and had, if anything, a slightly adverse effect.

The attitudinal consequences of affective change are also disclosed in desensitization studies involving more general attitudes dealing with sex, aggression, and other interpersonal contents. These findings indicate that the cognitive evaluative component of attitudes can be substantially modified through direct manipulation of the affective properties of the attitude object without involving informational references of a favorable or unfavorable sort. Essentially similar results are reported by Rosenberg (1960), who has shown that a negative affect induced through post-hypnotic suggestions produces a corresponding change in beliefs about the attitude object.

#### *BEHAVIOR-ORIENTED APPROACH*

The third approach to the modification of attitudes, which is frequently employed in

experimental social psychology (Brehm & Cohen, 1962; Festinger, 1957), relies upon a behavior-oriented strategy. Change programs conducted within a social-learning framework likewise favor this type of approach, although they receive little mention in discussions of attitude theory because until recently the cognitive consequences that undoubtedly accompany behavioral modifications have rarely been systematically assessed. Before specific experimental findings bearing on behavioral approaches are discussed, the conceptual scheme underlying most of this research will be presented briefly.

Investigations of the process of attitude change have, in large part, been guided by various models of cognitive consistency. Among the more prominent theoretical positions are those of *congruity* (Osgood & Tannenbaum, 1955), *balance* (Abelson & Rosenberg, 1958; Heider, 1958), and

*cognitive dissonance* (Festinger, 1957). Although these formulations differ somewhat in the types of events that are interrelated and the methods used to disrupt internal equilibrium, they have in common the view that a person's cognitions about himself and his environment are organized into an internally consistent system. It is further assumed, albeit implicitly, that there exists a strong drive for self-consistency. Consequently, the introduction of new information that contradicts existing attitudes or beliefs creates an aversive motivational state that instigates the individual to eliminate or reduce it by making cognitive adjustment designed to achieve a new mental equilibrium. These consistency doctrines thus assume that disruption of internal congruity between cognitive elements constitutes a basic determinant of attitude change.

In laboratory investigations the requisite

cognitive disequilibrium is usually created through exposure to persuasive communications which counter subjects' initial attitudes. Research stimulated by the cognitive dissonance model is especially relevant to the issue under discussion because, unlike the other consistency enterprises, the method most often employed to induce attitudinal changes involves getting a person to engage in attitude-discrepant behavior under conditions of minimal external inducement.

There are several reasons for selecting change in behavior as a primary mode of attitude change. First, it is much easier to arrange reinforcement contingencies for altering specific overt actions than for changing personal convictions, which have a more private character and are often more difficult to define. By skillful management of incentives a person can be induced to take progressively more favorable actions toward

attitude objects. Second, diverse opinions usually exist about possible effects of engaging in certain forms of behavior. Consequently, such beliefs are more readily modifiable than cognitive representations of the behavior itself, which, because of its objective status, is more firmly fixed. Thus, for example, it is easier to alter one's opinions about the effects of smoking than to deny that one is, in fact, smoking, or to discontinue smoking altogether. Third, in many cases behavior is so powerfully maintained by its immediate consequences that any induced cognitive modification is likely to exert, at most, weak and transitory influence upon corresponding actions. A psychotherapist, for example, who contracted to cure chronic alcoholism or debilitating compulsive rituals by exposing his clients to discrepant information about the physiological hazards of excessive drinking or the irrationality of needless,



arduous compulsions would, in a short time, suffer insolvency. Obviously, in instances where behavior is highly resistant to change, modification of response consequences is essential for effecting enduring alterations in performance to which attitudes would eventually be expected to adapt.

In the prototypic dissonance experiment, subjects' attitudes toward a particular issue or object are assessed through self-ratings, after which they are prompted, in one way or another, to engage in behavior which contradicts their private views. The same rating scales are later readministered, and the change scores are taken to represent the degree of attitude alteration. These studies (Brehm & Cohen, 1962; Cohen, 1964; Festinger, 1957) demonstrate that induced behavioral changes typically produce a corresponding modification in subjects' attitudes.

After it was demonstrated that behavioral change has attitudinal consequences, subsequent research was primarily concerned with identifying the variables governing the amount of attitudinal change effected by performance of discrepant behavior. The conditions selected for investigation are based upon the general assumption that the less compelling the reasons for engaging in the contradictory behavior, the greater the dissonance and hence, the more attitude change is required to reduce it. Thus, persons who engage in attitude-discrepant behavior because of large rewards or strong coercive pressures have ample external justification for their actions and presumably, therefore, experience little dissonance and change of attitude. On the other hand, it is assumed that those who behave contrary to their private opinions under conditions of minimal external inducement are obliged to discover new

attractions in the disagreeable activity to justify to themselves their voluntary performance of inconsistent actions.

According to dissonance theory, inconsistent action will produce the greatest amount of attitude change under conditions where small incentives, just sufficient to get the person to comply, are employed; there are minimal threats or coercive inducements; few reasons are given for taking the discrepant stand; the person receives a high degree of choice in committing himself to the counterattitudinal performance; there is high expenditure of effort in the attainment of the goal object or in the enactment of the discrepant behavior; the inducing agent is viewed unfavorably; and the person being influenced displays high self-esteem. It should be noted here that in naturalistic situations it is ordinarily no easy task to get people to perform personally

repugnant actions for any length of time under such unfavorable incentive conditions.

Evaluation of the major theoretical issues and voluminous empirical findings bearing on dissonance-arousing variables goes beyond the scope of this book. For the interested reader, detailed reviews are available elsewhere (Abelson, Aronson, McGuire, Newcomb, Rosenberg & Tannenbaum, 1968; Chapanis & Chapanis, 1964; Elms, 1967; Feldman, 1966). The empirical studies have generally yielded conflicting results; consequently, the precise conditions under which induced discrepant performance will have greatest effect on attitudes still remain somewhat obscure. A major difficulty in verifying derivations from dissonance theory and in drawing conclusions from experimental data arises because there exists no independent measure of the degree to which the postulated state of

dissonance has been aroused by a given procedure. Since the induction operations typically involve a complex set of events, experimental outcomes are open to numerous alternative explanations, which complicate interpretation. For a graphic illustration of the ambiguity concerning the independent variables in forced compliance studies, the reader is referred to the spirited debate between Aronson (1966) and Rosenberg (1966) who interpret the same experimental manipulation as having created opposite amounts of cognitive dissonance!

One theoretical issue, because of its obvious relevance to the role of incentives in change processes, warrants discussion in this context. It is widely believed that experimental findings concerning the effects of incentives upon attitude change brought about by divergent behavior contradict derivations from “conventional

reinforcement theory.” In fact, because of inadequate application of incentives, results of those studies are of limited relevance to reinforcement principles. Moreover, as will be discussed later, contrary to common belief both dissonance and reinforcement theory offer the same nonobvious implications.

In these experiments subjects are induced to write essays, enact prescribed roles, or otherwise publicly espouse a set of opinions that contradict their private feelings and beliefs. Some subjects are offered small monetary incentives (15¢, 50¢) for assuming the discrepant position, while others are promised more generous rewards (\$5, \$20). Several experiments (Brehm & Cohen, 1962; Festinger & Carlsmith, 1959) report an inverse relationship between size of monetary incentive and attitude change; other investigations have yielded both positive and inverse relationships

(Carlsmith, Collins, & Helmreich, 1966; Linder, Cooper, & Jones, 1967), no incentive effects of statistically significant magnitude (Elms & Janis, 1965; Janis & Gilmore, 1965; Nuttin, 1966), or evidence that higher monetary incentives produce greater degrees of attitude change (Collins, 1969; Rosenberg, 1965).

The conditions governing the relationship between incentives and attitude change cannot be reliably identified unless data are presented for two other critical relationships, namely, the amount of counterattitudinal behavior engaged in as a function of different magnitudes of reward, and the degree to which variations in amount of discrepant behavior are associated with extent of attitude change. In experiments where the amount and quality of counterattitudinal performance are measured, outcomes are often uninterpretable because the material rewards, which supposedly

serve as external inducements for discrepant behavior, are applied in such a loose contingency that their incentive function is virtually obliterated. Rewards are offered for any performance subjects choose to display, but otherwise the incentives are not explicitly made contingent upon the number, persuasiveness, and elaborated quality of arguments.

Even experiments conducted by proponents of incentive principles have limited bearing on incentive theory because rewards are offered without specific performance requirements. If incentives facilitate attitude change because they motivate individuals to generate positive arguments counter to their own beliefs (Janis, 1968), then subjects should be rewarded on the basis of the number of favorable arguments that they produce. An adequate test of the predictive efficacy of incentive theory would also require



independent evidence that variations in reward actually produce a differential number and variety of arguments. When rewards are provided without regard to response output there is no reason to expect them to have any consistent behavioral or attitudinal effects. This is borne out by the actual findings. A number of limiting conditions under which the consistency theories hold have been proposed, including freedom of choice, commitment, public or private performance, anticipated consequences of influencing others in the counterattitudinal direction, and self-devaluative consequences. However, none of these explanations adequately reconciles all the divergent results.

The positive influence of incentives is also frequently nullified in dissonance experiments by introducing monetary rewards in the context of inordinate social pressures upon subjects to

perform the disagreeable task. In the procedure most often employed, a flustered experimenter explains to an unwitting subject that an unexpected emergency has arisen because the regular assistant has just phoned saying that he will be unable to conduct the study with the next subject, who has already arrived and is waiting for his scheduled session. Would the subject be willing, for a small or a large fee, to substitute for the absent assistant by informing the waiting subject that a boring task is interesting and enjoyable? It is hardly surprising that, given such compelling reasons, the same amount of discrepant behavior is enacted regardless of incentive size (Carlsmith, Collins, & Helmreich, 1966; Festinger & Carlsmith, 1959), and subjects are willing to perform the disagreeable task even without any monetary rewards at all (Nuttin, 1966). Indeed, given this “sudden, unexpected,

and pressing” crisis, and urgent appeals to the subject to help the experimenter “out of a jam,” none of the experimental conditions, regardless of the appended fee, can be considered as providing insufficient justification for compliance. By contrast, when the inordinate social pressures are absent and the monetary rewards serve as the main justification for developing counterattitudinal arguments, as in essay-writing situations, increased incentives often produce increasing amounts of attitude change (Carlsmith, Collins, & Helmreich, 1966). Other investigators (Elms, 1967; Janis & Gilmore, 1965; Rosenberg, 1966) have therefore attributed the effects of differential payments to arousal of resentment, suspicion, and other interfering emotional responses rather than to their intended positive incentive value.

Although there is abundant evidence that

performance of counter-attitudinal behavior can be a highly efficacious means of altering existing attitudes, divergent findings regarding contributory conditions suggest that more than one mediating process is probably involved. Some of these alternative mechanisms are discussed below.

Individuals undergo considerable social training to be logical and consistent in their beliefs. To the extent that contradictory beliefs engender critical reactions from others and other negative consequences, inconsistency may become an aversive condition that instigates emotional arousal and cognitive modifications designed to remove the source of discomfort. Hence, dissonance processes may be involved to some extent under conditions where people have voluntarily committed themselves to perform disagreeable behavior with weak external

inducement and are therefore compelled to modify their beliefs to justify their contradictory actions. Because of the many limiting conditions under which dissonance effects are believed to occur, the phenomenon could not be highly prevalent. Dissonance reduction must, therefore, be only one of several processes activated by counterattitudinal performance.

Whenever a given action has been rewarded, reinforcement effects tend to generalize across similar classes of behavior, with the result that the incidence of corresponding verbal responses is likewise increased to some degree (Lovaas, 1961). Cognitive equivalents of the reinforced overt behavior are also affected in a similar manner (Miller, 1951) even though they have never been directly involved in the reinforcement contingency. Thus, in situations where counterattitudinal behavior is contingently rewarded,

analogous changes in the cognitive domain may partly reflect a *response generalization* process.

A third interpretation of role-enactment effects, advanced by Janis & King (1954), Janis & Gilmore (1965), and Rosenberg (1965), emphasizes the *self-persuasive* consequences of recalling and developing numerous positive arguments. According to this point of view, favorable incentive conditions are likely to produce a greater amount of improvisation and more persuasively elaborated arguments upholding the opposed point of view. In the course of role-playing the person becomes influenced by the merits of his own convincing arguments.

Although there is some evidence that degree of attitude change is positively related to amount and quality of counterattitudinal behavior, incentive size alone has no consistent effects upon either

improvisation or attitude change (Janis & King, 1954; Janis & Gilmore, 1965; Kelman, 1953; Rosenberg, 1965). However, Janis has shown that large incentives furnished by a favorable source produce better quality of performance and greater modification in attitudes than do small monetary rewards offered by an unfavorable sponsor for taking a contradictory stand. Rosenberg (1966) also offers the interesting proposition that self-persuasive consequences of behavioral rehearsal may depend upon the performer's psychological set. As in the case of influences from external sources, a person who labels his counterattitudinal advocacy as manipulative and deceptive may be considerably more resistant to his own persuasive arguments than if he undertakes the task with a positive self-searching orientation. This factor, if operative, might account for some of the conflicting results. Bern (1967)

similarly argues that the self-persuasive effects of observing one's own behavior may be partly determined by the stimulus conditions under which it occurs.

To the extent that attitudinal changes are partly governed by the amount of discrepant behavior engaged in, the selection of incentive magnitude as the critical variable for testing predictions from dissonance and reinforcement theory was an unfortunate choice, because variations in amount of reward have no consistent effects upon performance by human subjects (Bruning, 1964; Elliott, 1966; Lewis & Duncan, 1961). This is analogous to manipulating a variable that has no uniform effect upon the amount of dissonance arousal. In order to furnish a critical test of reinforcement theory, it is necessary to vary an incentive property that has reliable behavioral consequences, since the only



reason for employing rewards is to alter the incidence of the crucial behavior. In view of evidence that variable, intermittent reinforcement results in higher performance than the same rewards administered on a fixed schedule, a more appropriate incentive variable, from the standpoint of reinforcement theory, would be the pattern in which counterattitudinal behavior is rewarded. For most incentive characteristics, the supposedly rival theories predict the same outcome, though for different reasons. Consider, for example, situations in which counterattitudinal behavior is generously reinforced on a fixed-interval schedule in one case, and much less frequently on a variable-ratio schedule in a contrasting treatment. The less favorable incentive condition would be expected to produce more attitudinal change because, according to dissonance theory, it provides less justification

and hence greater dissonance, and according to reinforcement theory, because it generates more self-persuasive behavior.

It should also be noted in passing that, as far as behavior change programs are concerned, there are no reinforcement theories that prescribe the use of excessive rewards. On the contrary, as explained in Chapter 4, it is most advantageous for several reasons to employ incentive conditions just sufficient to elicit the desired behavior. First, the aim is to produce enduring alterations in behavior, and partially reinforced behavior is most resistant to extinction. Second, in a well-designed program artificial, external inducements, initially required to elicit the desired responsiveness, are gradually reduced as the behavior produces natural and self-evaluative reinforcing consequences. Since reductions in incentives generate disruptive emotional effects, a change

agent would be inviting unnecessary trouble by the use of needlessly large rewards.

The discussion thus far has focused on internal readjustments prompted by inconsistent action and alternative mediating processes that might account for the phenomenon. A fourth mechanism mediating role-enactment effects—an *experimental consequences* process—highlights the fact that a change in behavior provides a person with a variety of new experiences with the attitude object. Information gained from these new social interactions and observations can, in itself, produce substantial reorganization of attitudes (Kelman, 1961). Thus, for example, a prejudiced person who has been induced to behave positively toward members of a minority group may adopt a more favorable attitude not so much because of stress created by intrapsychic inconsistency, but because close positive

associations with minority groups furnish additional evaluative knowledge and rewarding outcomes for the participants. Direct experimental consequences of behavioral change, depending upon their nature, may far outweigh the influence of intrapsychic tensions in initiating and maintaining attitudinal changes.

Another important aspect of this process concerns the effects of induced behavioral modifications upon the social environment of a monitoring membership group. If a person behaves in a discrepant manner he may be virtually forced into association with the outgroup through ostracism. Under these circumstances "consistency" may be enforced and maintained through external, social mediation rather than intrapsychic compromises. Experiential consequences of behavioral change are likely to play a major role in determining how long induced

attitudinal changes will endure.

### *MODIFICATION OF SELF-ATTITUDES*

Of particular relevance to social approaches for developing and modifying attitudes is the evidence provided by Breer & Locke (1965) that task experiences can exert strong influence upon performers' attitudes. In these studies individuals are either differentially rewarded or experience differential success for performing tasks in two different ways. After the performance experiences, subjects' preferences for similar activities and more abstract values only indirectly related to the tasks themselves are measured. The overall results, based upon numerous investigations of attitudes toward individualism, equalitarianism, theism, and achievement, show that significant attitudinal changes can be induced by providing individuals with successful task experiences. For

example, college students who worked better in groups than alone became more collectivistic in their attitudes, whereas subjects who experienced greater success when performing tasks independently adopted a more individualistic orientation. These studies also provide some evidence that attitudes induced by success tend to generalize to related types of activities and to abstract preferences.

Change agents are often concerned not only with altering individual's evaluations of different forms of behavior but in modifying their self-attitudes as well. Indeed, in some schools of psychotherapy, such as the client-centered approach (Rogers, 1959), self-concept changes are routinely selected as one of the primary treatment objectives. According to this point of view, self-attitudes can be modified most effectively through intrapsychic exploration under conditions where

the change agent displays empathy, noncontingent positive regard, and genuineness. The individual's difficulties presumably stem from the fact that experiences that are incompatible with his faulty self-conception are consistently denied or inadequately symbolized. Self-examination in a positive, non-evaluative relationship will lead him to attend to warded-off experiences and accept them as part of himself; this, in turn, produces increased feelings of self-worth, self-acceptance, and greater freedom of action. This approach is predicated on the basic assumption that the person already has developed highly competent repertoires of behavior, most of which are inherently satisfying, but which are neither accepted nor actualized because of the faulty self-evaluative contingencies that he has adopted from misguided socialization agents.

Undoubtedly many competent people do

experience a great deal of self-generated distress and many self-imposed constraints as a result of adherence to ill-advised or excessively high standards of self-reinforcement. To the extent that a change agent differentially reinforces realistic standard-setting behavior and elicits emulation of more lenient self-evaluative standards as conveyed through his comments and actions, the client's habitual self-attitudes are likely to undergo change. However, results of outcome studies presented earlier indicate that this objective may not be too readily achieved on the basis of the types of conditions prescribed by the client-centered approach.

In many cases, of course, unfavorable self-attitudes stem from behavioral deficits and are repeatedly reinforced through failure experiences occasioned by the person's inability to meet realistic cultural expectations. It is obvious that for



such persons no amount of self-exploration will yield esteem-producing vocational skills, academic capabilities, interpersonal competencies, and rewarding avocational proficiencies which would support realistic positive self-evaluations. Here the primary concern must be with self-development rather than self-exploration. Evidence that attitudes are significantly influenced by rewarding performance feedback indicates that enduring positive self-evaluations can be most effectively achieved by arranging optimal conditions for the individual to acquire the requisite competencies. On the other hand, the likelihood is exceedingly small that favorable self-attitudes, however induced, could survive in the face of discontinuing performance experiences.

### **“Internalization” and Persistence of Behavioral Changes**

It is generally assumed that when a change in

behavior is accompanied by a set of congruent attitudes the behavior has become effectively internalized. After this state of integration is achieved, a person's conduct is presumably guided by inner values rather than by compliance with external demands and outcomes. As a result of reciprocal support of attitudes and behavior, internalized response tendencies are presumed to be more stable and enduring over time, even under relatively unfavorable conditions of external reinforcement, than compliant behavior without personal conviction. This view, if true, would appear on casual inspection to dispute the principle that behavior is regulated by its consequences. This apparent contradiction arises because the latter proposition has often been interpreted, by both its ardent proponents and its critics, to mean that behavior is governed by *situational contingencies*. In fact, as will be

explained later, even so-called internalized behavior remains under reinforcement feedback control, although it may be relatively independent of externally occurring consequences.

Before discussing alternative mechanisms that have been advanced to account for phenomena subsumed under the term internalization, it is appropriate to question what, if anything, is internalized in the organism. It is perhaps misleading to talk of behavior being internalized since, after response patterns have been acquired, it is doubtful that they can undergo any further interiorization. The major issues, therefore, are less concerned with the *locus of behavior* than with the nature of its *controlling conditions*.

In evaluating theories of internalization and self-regulating processes, it is important to distinguish between the *reinforcing* and the

*discriminative* functions of stimuli. Behavior is controlled not only by its reinforcing consequences, but also by environmental stimuli which signify the types of outcomes that are likely to follow certain courses of action. A great deal of human behavior that appears to be internally directed is, in fact, under the control of such discriminative cues. Sometimes the controlling stimulus events can be readily identified because of their distinctive properties, as in the case of a motorist who waits patiently at a red signal light on a deserted street without an automobile, pedestrian, or traffic officer in sight. While this motorist is exhibiting remarkable control, nevertheless his behavior is clearly externally regulated. This example, incidentally, illustrates some of the problems inherent in definitions of internalization which ignore the behavior-directing function of cues, and in which the

primary criterion is the occurrence of behavioral control in the absence of social surveillance.

In most instances the controlling external stimuli are not as easily identified, and consequently internal controlling agents tend to be invoked as explanatory factors. The case of a dog who refrains from lounging on an inviting sofa though unobserved, which is sometimes cited as an example of internalized control, might serve to illustrate the latter point. Some time ago we trained our spaniel through differential reinforcement to keep clear of all lounge chairs except one old recliner that soon became the dog's semi-permanent abode. Our conditionable spaniel exhibited a finely developed "superego" until one day when my wife rearranged the furniture. Upon entering the living room I was greeted by the tranquil scene of our socialized canine snoozing contentedly on a new chair located in the area

previously occupied by the threadbare recliner. It suddenly became apparent that our dog's behavior was regulated by irrelevant spatial cues rather than by an internal governor.

It has been repeatedly demonstrated in research with infrahuman organisms and with human subjects that cues regularly correlated with reinforcement eventually gain control over the associated behavior. Hence, in situations where reliable discriminative stimuli are present it is reasonable to question what has been internalized, and why it is necessary to invoke an internal agency which supposedly regulates the observed behavior. The fact that other types of subtle stimuli such as temporal cues (Ferster & Skinner, 1957; Sidman, 1966) can exert considerable discriminative control over the form, rate, and pattern of responding makes it exceedingly difficult to rule out external stimulus

determinants.

Although there are extensive stimulus supports for behavior, one must nevertheless explain differences in the responses of individuals to what appear to be essentially the same cues. To return to the example of our lonesome motorist, a systematic field study would undoubtedly disclose that under deserted traffic conditions some motorists would wait dutifully for the green light, others might stop momentarily and then continue on their way, while still others are likely to disregard the traffic signal completely. A noninternalist would most likely argue that the signal light, by itself, does not adequately define the total controlling environment. Whether or not a particular individual will transgress depends upon a large number of other stimulus variables (e.g., restraining influence of other passengers, time pressures on the motorist, his subjective

estimates of the probability of being caught and the gravity of the consequences that might follow, etc.) each of which may exercise some degree of control over his behavior. It is conceivable that in many cases consideration of all the relevant stimulus events operative in a given situation would disclose that behavior appearing to be internally governed is, in large part, under the control of complex patterns of multiple stimuli, which are rarely identical either over time or across individuals.

Systematic social analyses would undoubtedly also reveal that persons often persist in behavior that receives little or no social support (Bateson, 1961), they forego rewarding activities and objects which are readily available and socially permitted, they impose upon themselves highly unfavorable performance demands (Bandura & Perloff, 1967), and their actions may be highly



refractory even to severe external consequences (Farber, Harlow, & West, 1957). These and other data indicate that regulatory mechanisms can be established that render behavior partially independent of specific situational contingencies and outcomes.

One can differentiate several different types of “intrinsic” reinforcement control. As noted in Chapter 4, response patterns can be effectively maintained without social or natural support by their *intrinsic sensory consequences*. Artificial incentives and a great deal of social surveillance may initially be required, for example, to induce children to acquire the necessary skills to play the piano; but after proficiency is achieved keyboard performances are likely to be engaged in for their melodic feedback. Other activities may similarly be self-reinforced through their intrinsic sensory feedback. It should be noted, however, that the

reinforcing values of most visual or auditory stimuli generated by behavioral sequences must themselves be developed through a process of differential reinforcement. There is nothing inherently rewarding about a skillfully executed Wagnerian aria, an abstract painting, or a tuba solo.

Response patterns may also be partly maintained by *anticipatory consequences*. Studies reported earlier show that behavior can be sustained by imagined rewards or punishments. This process is also vividly illustrated in the case, cited in Chapter 1, of the patient who tenaciously performed arduous bizarre rituals designed to forestall dreadful, hellish torture, even though his atonement rituals were consistently and severely punished by ward personnel. In this instance imagined aversive consequences had such overpowering effects on the patient's behavior

that it became relatively autonomous of external reinforcements.

The third mechanism by which behavior can become largely independent of situational contingencies and outcomes involves a process in which response patterns are largely controlled by their *self-evaluative consequences*. As discussed in detail elsewhere, people adopt certain standards of behavior and generate self-rewarding or self-punishing consequences depending upon how their behavior compares to their self-prescribed demands. It is this self-imposition of contingencies that probably serves as the basis for the notion that values govern conduct. Under conditions where self-evaluative and externally occurring consequences conflict, as when a given pattern of behavior is socially rewarded but personally devalued, the inhibiting effects of anticipatory self-criticism may prevail over external rewards.

Conversely, positive self-reinforcement may maintain, in some strength, behavior that is nonrewarded or negatively sanctioned by societal agents whose behavioral standards are repudiated.

Although in both of the “internalization” mechanisms discussed above behavior is internally regulated by self-generated consequences, the types of outcomes produced differ in at least one important respect. In the first case, behavior is controlled by anticipatory representation of response consequences administered by external agents. Consequently, in situations which involve little risk that transgressive behavior will be detected, or when anticipated aversive outcomes are mild, people may readily transgress. In the second case, a person is deterred from behaving counter to his standards of conduct by anticipatory self-

punishing responses. Since the person's own self-demands and self-respect serve as his main guides and deterrents, behavior that is under the latter form of self-control is apt to be less affected by variations in specific situational contingencies. It might be noted in passing that the distinction drawn between types of self-generated consequences is similar to the common differentiation of fear-controlled and conscience-controlled behavior.

The preceding remarks are not intended to imply, of course, that self-reinforcement standards do not require some degree of social support. Persons tend to affiliate with others who share similar behavioral norms and mutually reinforce adherence to the standards they have adopted. Those who choose a small, select reference group that does not share the values of the vast majority may appear "inner-directed," whereas in actuality

they are very much dependent on the real or imagined approval and disapproval of a few individuals whose judgments are highly valued.

### **Stabilization of Behavioral Changes through Development of Self-Regulatory Functions**

By far the most important but most neglected aspect of behavioral change processes is the appropriate generalization of established patterns of behavior to new situations and their persistence after the original controlling conditions have been discontinued. The generalization and persistence of behavior can be facilitated by three different means. These include transfer training, alteration of the reinforcement practices of the social environment, and the establishment of self-regulatory functions. In cases where newly established or disinhibited response patterns either relieve subjective distress or are favorably received within the naturalistic environment, the

altered behavior will be adequately sustained without special maintenance procedures. Occasional negative experiences in the context of many neutral or rewarding experiences with formerly threatening events are usually ineffective in reinstating fear responding. On the other hand, where behavior that is rewarding and positively self-evaluative must be counteracted, and where customary environmental contingencies provide only weak support for alternative modes of behavior, the development of self-regulatory functions is essential if induced behavioral changes are to transfer and to endure to any significant degree. This issue is best exemplified in the treatment of antisocial personalities.

The most fundamental changes would clearly be accomplished by altering the contingency structure and reinforcement practices prevailing in the deviant subculture. This would require

modification of the behavior of individuals who exert a strong controlling influence over their fellow members in the social system. However, owing to the individualistic bias of treatment approaches and the inordinate difficulties encountered in efforts to gain adequate control over antisocial groups, the common procedure is to remove a transgressor from his usual environment and to subject him to some type of social influence.

Severe antisocial behavior can be controlled in residential centers through differential reinforcement. Moreover, the resultant conforming behavior is likely to persist as long as the institutional sanctions remain in effect. The residents may, in fact, come to behave irreproachably and even to perform obligingly whatever behavior is expected of them in order to make conditions in the institution as pleasant as



possible and to expedite their release. A beneficent incentive system in a treatment center may thus extract considerable prosocial behavior from delinquents, but such persons often revert to their usual antisocial patterns whenever supervisory staff members are no longer present. The attraction of the deviant subculture can be reduced by having members acquire alternative rewarding patterns of behavior and adopt new standards for self- evaluation.

Findings of studies reviewed in preceding sections and earlier chapters suggest several procedures that might be successful in developing self-regulatory functions. First, the desired patterns of behavior and standards for self-reinforcement should be adequately exemplified by change agents. Second, an explicit set of performance requirements linked with a graded system of incentives should be instituted, such

that progressive adoption of more advanced behavior brings increased freedom, privileges, and access to rewarding activities. However, provision of exemplary models and positive inducements for behavioral change may not alone be sufficient for transmitting self-monitoring reinforcement systems to avowedly antisocial persons.

After participants adopt new patterns of behavior on the basis of their utilitarian value, the next phase in the program may require direct training in self-reinforcement. This is achieved by gradually transferring evaluative and reinforcing functions from change agents to the individual himself. Rewards are now made contingent not only upon occurrence of desired behavior, but also accurate evaluation of one's own performances. Although at this stage the person judges when his behavior warrants reward according to the prevailing contingency structures, others still

serve as the reinforcing agents. After accurate self-evaluative behavior is well established, the reinforcing function is likewise transferred so that the individual both evaluates his own behavior and reinforces himself accordingly. In addition, the artificial material rewards are gradually reduced as the person's behavior is brought increasingly under the control of self-administered and symbolic consequences. The ultimate aim of the training in self-reinforcement is to produce a level of functioning at which participants can control their own behavior with minimum external constraints and artificial inducements.

Another means of instilling self-regulatory functions is to provide ample opportunities for participants to enact role behaviors toward peers that are ordinarily performed by regular change agents. Specifically, this entails delegating progressively more of the standard-setting,

evaluative, and reinforcement functions to members of the group as they progress in the program. The members themselves, with staff guidance, thus become the contingency managers. In order to enhance participants' willingness to adopt new role behaviors, increased privileges and rewards are associated with increased responsibility for guiding member behavior. Active participation in decision-making, application of rewards and sanctions for regulating the behavior of peers in accord with institutional standards, and performance of other counterattitudinal behaviors would be expected to exert greater influences on values and preferences than a program in which contingencies are simply imposed on covertly resistant members. It might also be supposed that those who willingly implement reinforcement contingencies advocated by a social agency for modifying the

behavior of their associates will similarly alter their own standards of self-reinforcement in the practiced direction.

When individuals function as change agents for members of their own group they not only achieve modifications that might otherwise be strongly resisted, but they also advance the treatment of their subordinates by providing models for desirable modes of behavior. One might expect peers to be emulated to a much greater extent than staff because peers are less socially distant, have more opportunity to exhibit desired response patterns, and are likely to evoke weaker resistive tendencies. Additionally, individuals are less apt to be ostracized for adopting the behavior of their peers.

Just as self-regulatory functions are socially transferable and conditionable, they are also

extinguishable unless given a sufficient amount of social support. Various social groups, which differ considerably in their behavioral standards and reinforcement practices, are potentially available to individuals. The groups with which they choose to affiliate largely determine the role models and contingency system to which they will be exposed and, consequently, the direction in which their behavior will be further modified. Therefore, attention to factors governing the selection of reference groups is of critical importance, particularly in cases where induced behavioral changes are discordant with the conduct advocated and reinforced by the individuals' former associates. Generalization and maintenance of personality changes can, therefore, be best ensured if the program instills in participants behavioral competencies and self-reinforcement standards that are likely to exert

decisive influence on association preferences.

After a person has adopted new standards for self-evaluation, a group's pressures for conformity to conflicting behavioral requirements are likely to be resisted. Instead, when the advocated conduct is not in accord with self-prescribed standards, the individual may attempt to alter the demands, he may remain a marginal member, or, if the rewards for membership are insufficient, he may discontinue his association with the group.

If persons are to affiliate with new social groups, they must acquire at least some of the requisite behaviors for securing approval and recognition that will be necessary to sustain their active involvement. Otherwise, they will be unable to meet successfully the demands of their new social environment and will either eventually withdraw from or be rejected by the group. Many

rehabilitative programs, for example, concentrate on producing radical changes in offenders' behavior that will lose them the social and material rewards associated with a deviant career, but relatively little attention is devoted to providing them the means for obtaining adequate substitute gratifications.

The way in which affiliation processes govern the course of behavior change is revealed in studies (Ellis & Lane, 1963; Krauss, 1964) investigating the sources of high educational aspirations among lower-class children. In the families of such children the parents cannot themselves provide satisfactory models of class-typed habits of speech, customs, and social skills required to win acceptance from upper middle-class peers. The parents characteristically initiate the upward mobility process by attaching positive value to educational achievements; admired



teachers further reinforce, by approval and example, college ambitions in lower-class youth; and selective association with college-oriented peers provides the social-learning conditions for the gradual acquisition of attitudes, belief systems, and complex behavioral repertoires necessary for achieving the desired socioeducational status. Bandura & Walters (1959) have similarly shown that adolescents tend to choose close associates who share similar value systems and behavioral norms; peer group members, in turn, serve to reinforce and to uphold the standards of behavior that the boys adopted.

### Summary

Several theories have been proposed concerning the role of symbolic processes in the regulation of behavior. These range from nonmediational views that assume that

reinforcing consequences modify behavior directly and automatically, to cognitive formulations that consider symbolic representation of contingencies a prerequisite for learning and performance change. A reciprocal-interaction theory seems best able to order the divergent findings bearing on this issue. According to this view, reinforcing consequences can alter behavior independently of awareness, but individuals eventually infer, from observation of their behavior and its differential outcomes, the correct reinforcement rules which partly control subsequent responding.

In studies of both instrumental and classical conditioning persons who discern the contingencies governing the administration of rewards and punishments typically display significant increments in learning or performance, whereas unaware subjects generally show few or no conditioning effects. Interpretation of these

findings, however, remains unclear because the studies lack the data necessary for determining whether conditioning failures in the absence of awareness are attributable to inadequate central registration of sensory inputs or to lack of recognition of contiguous stimulus events that have registered and evoked neural responses. Experiments designed so that subjects cannot observe either their own responses or the occurrence of reinforcing events—thus precluding recognition of contingencies—reveal that conditioning can occur, albeit much less reliably, on a nonmediated basis. The overall findings seem to indicate that awareness is a powerful facilitative factor, but it may not be a necessary and certainly is not a sufficient condition for behavioral change. Awareness in itself is unlikely to produce response changes unless persons possess the necessary performance skills and

unless adequate incentives are provided to elicit and to sustain appropriate responsiveness.

Symbolic activities not only augment the efficacy of reinforcement operations, but they are also increasingly employed to generate emotional effects that constitute the major reinforcing consequences in behavioral modification programs. In symbolic desensitization both the aversive stimuli and the emotion-neutralizing responses are in large part symbolically induced. Similarly, in aversive cognitive counterconditioning, avoidance responses toward addictive objects are established by contiguous association of symbolic representations of positively valenced stimuli with thought-produced nauseous reactions. Imagined consequences may also be employed instrumentally as covert reinforcers either to strengthen or to reduce the incidence of overt behavior. Perturbing trains of

thought often disrupt psychological functioning, in which case the problem becomes one of controlling symbolic events themselves. Self-control of thought processes can be achieved by redirecting attention to absorbing activities that elicit competing cognitions and by self-reinforcement of more constructive lines of thought.

The issue of mediational control of behavior is also frequently raised in the context of attitude theory. Although it is commonly assumed that attitudinal changes have widespread and stabilizing influences upon overt actions, induced alterations in attitudes in fact generally have few enduring effects upon behavior unless they receive sufficient reinforcement support. On the other hand, direct modification of the affective properties of attitude objects and performance of attitude-discrepant behavior produce stable

corresponding changes in attitudes. This process of cognitive accommodation to affective and behavioral changes has been variously attributed to striving for cognitive consistency, to response generalization of reinforcement effects, to the self-persuasive influence of counterattitudinal behaviors, and to new experiential consequences resulting from the induced behavioral changes. It still remains to be established whether environmental influences have similar but independent effects on feelings, beliefs, and behavior, or whether a change in one of these components engenders congruous modifications in the other constituents.

When regulatory symbolic processes are combined with self-generated consequences, behavior may become “internalized” or partially independent of situational contingencies and outcomes. Several different types of “intrinsic”

reinforcement control can be distinguished. Behavior may be sustained by its inherent sensory feedback, by anticipatory outcomes, or by self-evaluative consequences.

The establishment of self-monitoring reinforcement systems is essential if induced behavioral changes are to generalize and endure, particularly where social environments provide either weak support for new modes of behavior or conflicting patterns of reinforcement. Stabilization of changes is most likely to be ensured when the standards adopted for self-reinforcement result in selective association with persons who share similar behavioral norms, thus providing social support for one's own system of self-evaluation.

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