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COGNITIVE AND BEHAVIORAL THEORIES OF DEPRESSION

DEPRESSIVE DISORDERS

Cognitive and Behavioral Theories of Depression

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THEORETICAL MODELS

In 1928 Ivanov-Smolensky, a physician working in Pavlov's labs, reported on his observations of a dog that appeared depressed consequent to its inability to make extremely fine discriminations in a classical conditioning task. The paper had little impact on the field of depression psychopathology and only in the past 20 years has there been a concerted effort to apply learning models to the phenomena of depression. During this recent period a number of new theories have developed. They have led to the generation of a great deal of research data on the psychopathology of depression and to the development of many new therapeutic approaches to treatment. The theories themselves have been influenced by these developments and revised theories have evolved from earlier forms.

Behavioral models were the first learning approaches to be applied to depression. The behavior modification approach to depression brought the tradition of borrowing models from the psychological laboratory and adapting them to the explanation of complex human problems such as depression. As

theories have developed, the learning models of the animal laboratory have not been the only influences on the process. The psychology of learning has gone through a cognitive revolution in recent years, and current work stresses models of human learning and memory. These new cognitive models have been brought into the domain of clinical psychology generally and the psychopathology of depression in particular. Earlier theories have evolved in a cognitive direction and new theories have developed from a cognitive perspective. Social psychology has also had an influence on theory in clinical psychology, and constructs from the social psychological laboratories have been adapted to models of depression.

This chapter will describe four major theoretical models of depression that have been developed from the cognitive-behavioral perspective in clinical psychology. In each case a description of the basic elements of the initial theory will be followed by a sampling of the main lines of research generated from the theory. Specific forms of therapy derived from each theory will be described briefly with a sampling of the associated therapy research. Each theory has been revised over time, as research has introduced new problems which the theories need to account for. The chapter will trace the important developments in each theory and attempt to sum up its current status.

Depression presents a difficult problem to the cognitive-behavioral approach to theory in psychopathology because depression is quite complex in its symptomatology and etiology. The contrast with anxiety is instructive. Behavioral

approaches to anxiety made great strides in theory and practice with the simplifying assumption of anxiety as a conditioned response. The analogy of the simple phobia as composed of related behavioral, cognitive, and physiological responses to a specifiable stimulus has great explanatory power. Testable models of etiology and effective forms of treatment follow from the basic metaphor. Depression is more complex in its manifestations. It includes overt behavior (e.g., sad demeanor, slowed activity, lack of responsiveness), cognition (e.g., low self-esteem, hopelessness, helplessness, negative view of the world), and somatic symptoms (e.g., loss of weight, disturbed sleep, physical complaints) that extend to almost all domains of functioning. While a precipitating event or theme can usually be identified, depression is not stimulus-bound in the way anxiety is. Depression is more constant and pervasive. From the cognitive-behavioral perspective this can be seen as a problem in response and stimulus overgeneralization. Why should the stimulus of loss of a job generalize to loss of responsivity to other, formerly enjoyable stimulus situations (e.g., going to a movie)? Why should its effects generalize to affect so much of the person's behavior (e.g., loss of interest in sex, reduced eating, and low self-esteem)? Each theoretical model had to account for these diverse phenomena, and each theory took a different approach to handling the problem. For the most part, a single symptom was selected as the core or center of depression and it was assumed that other symptoms followed as secondary effects. The chapter will attempt to highlight and contrast these different approaches to the problem of

overgeneralization in depression.

REINFORCEMENT THEORY

One of the first to apply a behavioral analysis to the problem of depression was Charles Ferster (1973), who viewed depression as a generalized reduction of rates of response to external stimuli. Behavior was then no longer under the control of reinforcers that once were effective. Ferster's basic analogy in learning terms was to the process of extinction. Major losses in life could be seen as losses of important sources of reinforcement. Generalization of the effects of the loss occurred because other behavior was chained to or organized by the central source of reinforcement. The concept of chaining referred to the situation where one response was dependent on a later response, because the first functioned to gain access to the second. For example, for a man who becomes depressed after the break-up of a romance, the woman in the relationship could be thought of as having been an important and central source of reinforcement. His relationship with her may have organized much of the man's behavior, chaining it to this source of reinforcement. If in his depression he no longer goes to movies, a previously enjoyable activity (reinforcing), it is because he formerly went with her and now that source of reinforcement is not available. He might also stop reading the newspaper section that contains movie advertisements and reviews. His depression can be seen in the many behaviors that are reduced in rate.

In later elaborations of his theoretical ideas, Ferster (1977, April; 1981) stressed the analysis of verbal behavior as an important avenue for studying

depression. As a verbal phenomenon, depression consists largely of complaints that are negatively reinforced by those around the depressed person.

Peter M. Lewinsohn developed similar ideas into a coherent theory and explored the ramifications of the theory in a clinical research program (Lewinsohn, 1974; Lewinsohn, Biglan, & Zeiss, 1976). In Lewinsohn's terms, depression is a response to a loss or lack of response-contingent positive reinforcement. Insufficient reinforcement in major domains of one's life leads to dysphoria and a reduction in behavior, which are the primary phenomena of depression. Other symptoms of depression such as low self-esteem and hopelessness follow from the reduced level of functioning.

According to the theory, there are three ways in which insufficient reinforcement may arise. First, the environment may be inadequate in providing sufficient reinforcement to maintain adequate functioning. For example, the loss of a job or of a loved one would represent a significant loss of a source of reinforcement. Inability to find a job, or a distressed marriage, might cause a continuing lack of reinforcement. Second, the person may lack the requisite skills to obtain reinforcement in an environment where it is potentially available. Poor interpersonal skills might prevent a person from developing satisfactory social relationships; poor communication skills might maintain a distressed marital relationship. Third, the reinforcers might be available to the person but he or she is unable to enjoy or receive satisfaction from them. The reason for this condition

would ordinarily be interfering anxiety. The socially anxious person does not functionally receive the reinforcers, even if they are emitted by an amiable social environment.

Another feature of the theory is its suggestion that, once depression occurs, depressive behavior functions to elicit reinforcement from others in the form of concern and succor. The person who is experiencing insufficient reinforcement obtains reinforcement for acting in a depressed manner, which functions to maintain the depression. Furthermore, although depressive behavior elicits positive responses from others in the short run, continued depression is aversive to these others and they begin to avoid the depressed person, whose reinforcement is again reduced. The ultimate results are that the depressed behavior is maintained on a thin schedule of reinforcement, and reinforcement is still insufficient to overcome the depression in a self-perpetuating cycle.

Research

Several areas of research support elements of Lewinsohn's theory. One area concerns the relationship between mood and daily events. On the assumption that positive and negative daily events can be thought of as reinforcements and punishments, this research looks at daily mood as it is influenced by events. Positive events (rewards) should elevate mood and negative events (punishments) should depress mood. Contingency between the events and the

person's behavior is assumed and not demonstrated.

Lewinsohn and his coworkers have developed instruments for assessing daily events. The Pleasant Events Schedule (MacPhillamy & Lewinsohn, 1982), a lengthy list (320 items) of potentially pleasant events, is used in two ways. In the retrospective format the subject identifies items that have occurred in a specified period of time, usually the past 30 days, and indicates the potential pleasure of each event. The first (identifying) responses are summed for an activity level score, the second (evaluating) responses yield a reinforcement potential score, and the sum of the cross-products of the two ratings is used as an index of obtained reinforcement. In its second use, the Pleasant Events Schedule, or a selected subset of its items, is employed as a daily checklist for monitoring the occurrence of positive events. Lewinsohn and Talkington (1979) developed a parallel Unpleasant Events Schedule.

Findings are generally consistent with the theory. Depressed persons have lower activity levels, report less pleasure from positive events (are unable to experience reinforcement), and obtain less total pleasure (experience a relative lack of reinforcement) compared to normals or psychiatric controls (MacPhillamy & Lewinsohn, 1974). The opposite effects occur with the Unpleasant Events Schedule scores, though with somewhat less consistency (Lewinsohn & Talkington, 1979). With treatment, scores improve on both event scales in appropriate directions (Lewinsohn, Youngren, & Grosscup, 1979).

Daily mood is positively correlated with pleasant events and negatively correlated with unpleasant events; the two types of events are uncorrelated with each other (Grosscup & Lewinsohn, 1980; Lewinsohn & Graf, 1973; Lewinsohn & Libet, 1972, Rehm, 1978). These findings are presumed to be consistent with the basic theoretical mechanism that loss or lack of reinforcement produces depression as an extension of normal sad mood. The findings also support the rationale behind attempting to increase pleasant events as a means of therapeutic intervention.

Social skill deficits in depression have been demonstrated in several studies. Lewinsohn, Mischel, Chaplin, and Barton (1980) found that depressed individuals in a group interaction were rated by themselves and by other group members as less socially skilled than either normal or psychiatric control group members. Interestingly, depressed subjects rated their own skills accurately while normals and psychiatric controls rated their own skills higher than they were rated by others. Both self-ratings and the ratings of social skill by others improved with therapy. Most studies of social skill in depression do not address the question of whether depressed persons have a true skill deficit or whether, when depressed, they merely perform in a less skilled fashion. The fact that social skills improve following treatments for depression that do not specifically target social skill (Rude, 1986) argues for the deficit being only in performance.

There is little direct research on the question of whether anxiety inhibits

pleasure in depression but it is a well-recognized clinical reality that anxiety is often a feature of depression (Kendall & Watson, 1989; Maser & Cloninger, in press). Anxiety disorders often precede depressive disorders in the same individual but it is not clear that a causal relationship exists as specified in Lewinsohn's theory, that is, that anxiety interferes with reinforcement.

Therapy

Lewinsohn's work on the psychopathology of depression has been consistently paralleled by a sequence of studies developing a behavioral approach to therapy for depression. His early approach to therapy for depression (Lewinsohn, Biglan, & Zeiss, 1976) was to develop a series of depression therapy "modules." The idea of the modular approach was to match the module to the primary deficit of a particular depressed person. Thus, the person with insufficient reinforcement in his or her environment would be matched to an activity-increase therapy module in which the goals of treatment would be to identify potentially reinforcing activities and to encourage the patient, through scheduling, incentives, and the like, to engage increasingly in these activities. An interpersonal skill training module was developed to intervene in cases where social skill deficiencies were evident, and a desensitization module was developed for patients who demonstrated interfering anxiety.

Research has shown, however, that matching of patient and therapy does

not seem to be important. For example, Zeiss, Lewinsohn, and Mufioz (1979) found that interpersonal, cognitive, and activity-increase modules were helpful in ameliorating depression regardless of the pattern of deficits shown by the patients at pretest, and that regardless of the therapy module that patients received, they improved in all three areas. This finding of nonspecificity is something of a problem to the theory and has led to a rethinking of the approach to therapy.

In recent years, Lewinsohn and his colleagues have taken a psycho-educational approach to therapy for depression. The rationale is that a variety of skills relevant to ameliorating depression can be taught to patients in a therapy program and their cumulative effect is likely to be more helpful than the effect of any single module. The product of this work is a structured therapy course, "The Coping with Depression Course" (Lewinsohn, Antonuccio, Breckenridge, & Teri, 1987). The 12-session course consists of sections on the overall rationale for the course, relaxation training, an activity-increase unit, a cognitive unit on constructive thinking, a social skills training unit, and a unit on developing a self-change program. The cognitive unit is related to the basic theory by the assumption that distortions of thinking can interfere with the accurate perception of reinforcement and contingencies. Brown and Lewinsohn (1984) evaluated the course in group, individual, and minimum contact (i.e., self-change) formats and found them to be equally effective.

A number of other, separately developed therapy programs share aspects of

the reinforcement theory orientation. Most focus on teaching some form of interpersonal skills. A general social skill training approach was adopted by Hersen, Bellack, Himmelhoch, and Thase (1984) in a study that found social skill training to compare favorably to treatment with a tricyclic antidepressant. Marital communication skills were successfully employed in the treatment of depression in several studies (Beach & O'Leary, 1986; Jacobson, Holtzworth-Munroe, & Schmaling, 1989; McLean & Hakstian, 1979). Nezu (1986; Nezu, Nezu, & Perri, 1989) recently described a therapy program focusing on problem-solving skills training.

Comment and Recent Developments

The most problematic point in reinforcement approaches to depression is demonstration of a contingency between specific responses and reinforcement. Some group or marital interaction studies seem to point to a functional relationship between some specific verbal response classes and reactions of others. For example, depressive complaints and nagging may be negatively reinforced by spouses who give in to the complainant (Hautzinger, Linden, & Hoffman, 1982). This is the reinforcement of depressive behavior, which may have a maintaining function, but it is unlikely to explain the origin of a depressive episode. The reduction of behavior as a consequence of a loss or lack of response-contingent reinforcement is harder to demonstrate.

Overgeneralization seems to be based on an implicit assumption that a basic minimum ratio of reinforcement to behavior is required to maintain an adequate level of functioning in very broad and interrelated life domains (e.g., work; domestic or social life). The nature of these relationships is not well articulated and is only roughly translated into empirical demonstration.

In a theoretical article, Lewinsohn, Hoberman, Teri, and Hautzinger (1985) reviewed developments in research and theory of depression and pointed to needed expansions and integration of the behavioral reinforcement theory. They suggested that cognitive factors involving increased self-awareness may mediate between reduced reinforcement and dysphoria/depression. Such mediation may explain the overgeneralization of the effects of reduced reinforcement. Other suggested modifications of the theoretical approach involve consideration of feedback loops whereby the consequences of depressed behavior may affect depression-evoking events, reinforcement, and self-awareness in ways that amplify depression. It remains to be seen what kind of influence this next step in reinforcement theory will have on the field of research and practice.

LEARNED HELPLESSNESS THEORY

The Animal Model

Martin E. P. Seligman's (1974, 1975) learned helplessness theory of depression began with an animal model for the disorder. Seligman observed a phenomenon wherein animals exposed to unavoidable shock were subsequently deficient in learning an escape or avoidance response in a shuttle box apparatus (Seligman & Maier, 1967). Seligman assumed that the animals had acquired a generalized helplessness—a perception of lack of contingency between responses and outcomes. Contingency was seen as the critical factor since animals with equivalent but response-contingent shock learned later to escape and avoid like animals with no precondition.

Seligman saw in the behavior of these animals may analogies to human depression. Induction by inescapable shock was seen as parallel to the traumatic loss that often precipitates depression. The animals' behavior showed passivity, which Seligman felt paralleled the reduction in instrumental behavior typical of depressed people. Other symptom parallels included weight loss and lack of appetite. The learned helplessness effect dissipated with time, as does normal depression.

When experimental analogs of the helplessness induction experiment were conducted with humans, findings were similar. College students who were

exposed to inescapable noise or unsolvable anagrams were deficient in later escape or anagram pattern recognition tasks (Miller *&* Seligman, 1975). Mildly depressed students behaved like those who had been through the helplessness induction procedure. Deficits in perception of contingency connected to depression were further examined in studies of expectancy shift (Abramson, Garber, Edwards, & Seligman, 1978). In these studies, subjects were given feedback of consistent success or failure on tasks described as involving skill or chance. Depressed subjects were slower to change their expectancies for success based on positive feedback, suggesting a deficiency in perception of contingency.

The Attribution Revision

As research accumulated, conceptual and empirical problems became apparent in the animal learned helplessness model of depression. One of the central conceptual issues involved the paradox of guilt in depression. If depression is based on helplessness and the perception of noncontingency between the person's behavior and outcomes, then it is difficult to explain why people should perceive themselves responsible and blame themselves for bad outcomes (Abramson & Sackheim, 1977).

In 1978 an attributional revision of the learned helplessness theory was published (Abramson, Seligman, & Teasdale, 1978). The revision adapted the social psychological ideas about attribution of responsibility. When people make

inferences about the causes of events in their lives, these attributions can be categorized according to a simple dimensional structure (Weiner et al., 1971). Causes are either internal or external; that is, the event is caused either by some aspect of the person (skill, personality, or effort) or by some aspect of the outside world (the task, another person, or chance). Secondly, causal factors are either stable or unstable. That is, either they continue to function consistently over time (skills; types of easy or difficult tasks) or they are relative to the particular time of the event (how much effort was expended; luck). The two dimensions cross to make a two-by-two classification of causes.

Abramson, Seligman, and Teasdale (1978) added another dimension for their purposes. Attributed causes can also be thought of as global or specific. Global causes are general to many situations whereas specific causes apply only to limited domains. For example, a person might attribute success on an examination to general intelligence or to a skill with multiple-choice math questions.

Using these concepts, the revised model hypothesized that people develop consistent attributional styles and that a particular attributional style is typical of people at risk for depression. Such people habitually attribute negative outcomes to internal, stable, global causes and they credit positive events to external, unstable, specific causes. In other words, following a failure the depressive person accepts blame and assumes the cause is general and persisting. Following a success the same person takes no credit and assumes the success has no

implication for other behavior or for the future.

A person with this depressive style is likely to make a depressive attribution when a major aversive event occurs. To make such an interpretation is to perceive oneself as helpless: I am unable to avoid failure and unable to produce success. A depressive attributional style is a vulnerability or risk factor for making a depressive attribution following an aversive event. The nature of that attribution will determine the nature of the depression. An internal attribution determines whether the person's self-esteem is affected, a stable attribution determines the chronicity of the depression, and a global attribution determines the generality of the feelings of depression. The intensity of the depression is determined not only by the aversiveness of the event but by the person's consequent attributions. The revision reconceptualizes what was a behavioral animal model into a cognitive social psychological model.

Research

An immense literature has developed from the attributional revision. A number of interrelated issues have been studied. Assessment of attributional style as a stable personality trait has been facilitated by the development of an instrument, the Attributional Style Questionnaire (ASQ) (Peterson et al., 1982). Subjects are asked to identify the most likely cause of some hypothetical positive and negative events and then to rate the cause on the three attribution

dimensions (internal, stable, and global). Quite a few studies have assessed attributions by various methods and have defined depressed samples in various ways (Raps, Peterson, Reinhard, Abramson, & Seligman, 1982; Zuroff, 1980, 1981). Attributional style assessed on the hypothetical items of the ASQ is not always consistent with attributions of real events. Studies of the consistency of attributional style both during and after recovery from depression (Eaves & Rush, 1984) addressed the question of whether depressive attributions are merely a symptom of depression or a more enduring trait. Only a few prospective studies looked at the question of attributional style as a risk or vulnerability factor for depression (Metalsky, Abramson, Seligman, Semmel, & Peterson, 1982; O'Hara, Rehm, & Campbell, 1982).

Therapy

No therapy program has been developed directly from the learned helplessness perspective. Seligman (1981), however, suggested that four basic therapy strategies are consistent with the tenets of the theory. The first is environmental manipulation, which would involve putting the person in an environment that would promote the recovery of a sense of control. Psychiatric hospitalization might be one environment in which an individual might experience a sense of control over daily events. The second is skill training, to give the person actual increased ability to control the environment. Interpersonal skill training would be only one example. Third, Seligman suggested the possibility of

resignation training, to help a person give up an unrealistic goal that he or she is helpless to achieve and to replace it with a more realistic and controllable goal. Fourth, attribution retraining would be directed at the depressive attributional style itself, as a means of avoiding the initiation of new depressive episodes.

Comment and Recent Developments

The learned helplessness theory has been the topic of a great deal of research, yet several issues remain problematic and are not well resolved empirically. A major issue centers on attributional inference as a stable individual difference. Attributional style is a trait-like concept and many of the problems of trait models apply. Do individuals actually develop attributional styles that are stable and consistent? The social psychological literature would suggest that this is not likely (Weiner et al., 1971). Most individuals ought to develop differentiated attributional tendencies. The child with athletic talent comes to attribute athletic success internally, but if he or she consistently does poorly in math, a successful exam score might be attributed to chance. Attributional assumptions accumulate from experience and allow people to make causal inferences as a basis for accurate predictions in the world. A depressive attribution is distorted and overgeneralized almost by definition, but in many instances there may be an element of reality. The complexity of the process does not seem to be well modeled in the theory.

Recent papers concerning the theory have suggested some additional revisions. Alloy, Clements, and Kolden (1985) and Abramson, Alloy, and Metalsky (1988) emphasized the idea that attributional style is neither a necessary nor a sufficient cause of depression but only a contributory cause or a risk factor along with many other possible risk factors. A depressive attribution about a particular adverse event is only partly predictable from attributional style. These researchers also acknowledged that many other paths to depression may exist and the model therefore applied to only a subset of depressions. Another step in the causal sequence was added by the assertion that helplessness leads to depression when it leads the person to be hopeless about the future. Hopelessness is seen as the proximal antecedent cause of only hopelessness depressions. The authors referred to this as a revised "hopelessness model of depression."

The model becomes harder to test when an unknown proportion of depressions is excluded and when multiple unspecified factors may determine whether a depressive attribution is made. It is also difficult to test the idea of a causal sequence of cognitive mediating constructs, such as helplessness to hopelessness to depression, and to separate a mediating cognition from the complex cognitive symptomatology of depression. Helplessness and hopelessness are also components of the general negative bias that depressed subjects show about themselves in all areas of inference, including self-evaluation, expectancies, and so on.

SELF-CONTROL THEORY

The relevance of models of self-control to depression was commented on early in the history of social learning approaches to psychopathology (Bandura, 1971; Marston, 1964; Mathews, 1977). Models of self-control are concerned with the ways in which people manage their behavior in order to obtain long-term goals (e.g., quit smoking, or start exercising for long-term health). In depression, people are hopeless about long-term goals and feel helpless to manage their own behavior. When a person becomes depressed, behavior organized by long-term goals deteriorates first. The depressed person may continue to meet the immediate demands of daily existence but behavior without immediate consequences is not performed.

Rehm (1977) presented a self-control model of depression which was an attempt to integrate aspects of the theories of Lewinsohn, Beck, and Seligman under a self-control framework. The framework was an adaptation of Kanfer's (1970) model of self-control. Kanfer described people's efforts at controlling their behavior to obtain long-term goals in terms of a three-stage feedback-loop process. When people see the need to change behavior to achieve a delayed goal, they begin to pay conscious attention to the relevant behavior (e.g., number of cigarettes smoked). This is the first or self-monitoring stage of the loop.

The information monitored is compared to some internal standard and a judgment is made of the valence of the behavior in a process of self-evaluation.

Here the model was modified by the addition of an attributional component to self-evaluation. Self-evaluation of behavior as positive or negative is premised on having made an internal attribution for the act. Behavior perceived as externally caused is not a basis for evaluation of oneself. As such, attributional judgments act to moderate self-evaluation.

The final phase of Kanfer's model is self-reinforcement. Kanfer assumed that people are able to control and influence their own behavior using the same reinforcement principles that would apply to the control of someone else's behavior. Positive behavior toward a goal is rewarded and negative behavior is punished. Self-reward and self-punishment act as supplements to the external rewards and punishments of the environment and function to maintain behavior when external reinforcement is not immediate.

The self-control model of depression (Rehm, 1977) postulated that the behavior of depressed people could be characterized by one or more of six deficits in self-control behavior. First, depressed persons selectively attend to negative events in their lives, to the relative exclusion of positive events. This self-monitoring deficit describes the phenomenon discussed by Beck (1972) as selective attention in depression. Ferster (1973) described this as the depressed person's vigilance in anticipating aversive experiences. Second, depressed people selectively attend to the immediate as opposed to the delayed consequences of their behavior. This might be considered an overall effect of depressive self-

control. Depressed persons have difficulty in looking beyond the demands of the present when making behavioral choices.

Third, depressed people set stringent self-evaluative standards for themselves. Depressed people are often perfectionistic. Standards for themselves are more stringent than those applied to others. Fourth, depressed persons make depressive attributions about their behavior. Depressed persons make internal attributions for failure and make external attributions for success. A global-specific dimension was discussed in terms of breadth of standards applied. With the advent of the attributional revision of the learned helplessness theory (Abramson, Seligman, & Teasdale, 1978), later versions of the model have simply incorporated the three-dimensional analysis of helplessness theory.

Fifth, depressed people administer to themselves insufficient contingent reward to maintain important domains of behavior, and sixth, they administer excessive self-punishment, which suppresses constructive behavior in many areas. These deficits in the self-reinforcement phase of self-control are partly the consequence of deficits in the earlier phases of self-control behavior. For example, to monitor negative events and set high standards minimizes reward and maximizes punishment.

Self-reinforcement is seen as supplementing external reinforcement. The nondepressed person is able to maintain behavior toward goals even when the

external environment is not reinforcing that behavior. The depressed person is dependent on external sources of reinforcement and becomes depressed when they are insufficient, as suggested by Lewinsohn. When environmental contingencies change, the individual is faced with organizing efforts to readjust and reorient toward distant goals. The self-control model is a vulnerability model in the sense that poor self-control skills, as described above, place people at risk for depression under adverse conditions of external reinforcement.

The overgeneralization represented by depression is dealt with by the fact that self-control skills are assumed to act like a control program employed to manage all domains of behavior aimed at long-term goals. When self-control skills are called on to aid in readaptation in a major life area, poor skills will lead to maladaptation with implications for poor functioning in many areas.

Research

Research relevant to the self-control model of depression is diverse and has been reviewed elsewhere (Rehm, 1982, 1988). A few examples will be given here. Roth and Rehm (1980) examined the self-monitoring behavior of depressed and nondepressed psychiatric patients who viewed themselves interacting on videotape and counted specified positive and negative behaviors. Although there were no objective differences between groups, the depressed patients counted fewer positive and more negative behaviors than the nondepressed patients did.

While the study did not distinguish between selective attention and different standards for calling an event positive or negative, it pointed to a depressive tendency to self-monitor in a biased fashion.

Rehm and Plakosh (1975), using a paper-and-pencil questionnaire, found that mildly depressed college students were more likely to express a preference for a small immediate reward in contrast to a larger delayed reward. Faced with a real, as opposed to a hypothetical choice, subjects in another study (O'Hara & Rehm, 1982) did not respond in a way related to depression scores.

Studies showing negative self-evaluation in depressed persons are plentiful (Lewinsohn et al., 1980). Performance standards of depressed persons appear to be higher because depressed persons often evaluate the same actual performance as less positive than do nondepressed persons. Shrauger and Terbovic (1976) demonstrated that low self-esteem (depressed) college students gave themselves a lower rating on a task than they gave a confederate who was duplicating the subject's performance.

Self-reinforcement studies have compared the rate at which depressed and nondepressed subjects administer token rewards and punishments to themselves based on their evaluations of their own performance. For example, Rozensky, Rehm, Pry, and Roth (1977) found that on a recognition memory task, depressed psychiatric patients self-rewarded less and self-punished more than

nondepressed patients, even though their actual performance was equivalent. These studies have not usually differentiated self-reinforcement from self-evaluation.

Several scales have been developed to assess self-control behavior for research purposes. The Self-Control Questionnaire was developed explicitly to assess the deficits outlined in the self-control model of depression and it was used as a therapy outcome measure in several studies (Fuchs & Rehm, 1977; Rehm, Fuchs, Roth, Kornblith, *&* Romano, 1979). A Self-Control Schedule (Rosenbaum, 1980) measures a broader range of self-control behavior and has been used as an outcome or predictor variable in psychotherapy outcome studies. Heiby (1982) developed a Frequency of Self-Reinforcement Scale and has used the scale to identify depressed subjects with deficits suited to self-control therapy. Lewinsohn, Larson, and Mufioz (1982) developed a Cognitive Events Schedule with the similar purpose of assessing self-reinforcing cognitions.

Therapy

One of the research developments from this perspective has been the creation and evaluation of a therapy program based on the self-control model. Self-Control or Self-Management Therapy is a highly structured, manual-based, group-format program that presents the depression concepts of the model to participants and sends them out with weekly homework assignments to modify

their self-management behavior. The program has been evaluated in six outcome studies by Rehm and his colleagues and in a number of independent replications (Rehm, 1984).

The first two studies were essentially validation studies that found the Self-Management program to be superior to nonspecific and waiting list controls (Fuchs & Rehm, 1977) and to an assertion skills comparison group (Rehm et al., 1979). The second two studies were attempts to evaluate the contribution of major components of the program, using a dismantling strategy (Kornblith, Rehm, O'Hara, & Lamparski, 1983; Rehm et al., 1981). Results indicated that outcomes did not seem to be affected by the omission of components such as the self-evaluation or self-reinforcement portions of the program. Two more studies looked at versions of the program written to focus on cognitive versus behavioral targets and their combination (Rehm, Kaslow, & Rabin, 1987; Rehm, Lamparski, Romano, & O'Hara, 1985). Results indicated equivalent effects on cognitive and behavioral outcome measures which were also independent of initial status on cognitive or behavioral measures of deficits. This nonspecificity of effects has become a common finding in the depression outcome literature.

Comment and Recent Developments

Kanfer and Hagerman (1981) presented a revised model of self-control and discussed its applicability to depression. The revision elaborated on the sequences

of decisions that are made in the self-control process. For example, attributional processes are incorporated at both the self-monitoring and self-evaluation stages of regulation. In order to set the self-regulatory processes in motion, the person must have made an internal attribution about the cause of a problematic behavior. When monitored behavior is compared to a standard, an internal attribution is a necessary prerequisite for making a positive or negative judgment that will lead to self-reinforcement. The revised model also elaborated on the interaction of short- and long-term goals and standards which may be applied to specific behaviors. To date, the revised model has not led to extensive research relevant to depression.

As the depression model has been applied empirically, a number of issues have been raised. The specificity of some of the deficits to depression has been questioned (Gotlib, 1981) and the model has not been applied to the question of differentiating other forms of psychopathology. The results of the therapy outcome research have been puzzling. The self-control model appears to have utility as a heuristic for helping people understand and modify their own depressive behavior, yet it has not been demonstrated that specific deficits are remediated or that specific therapy procedures are effective. These are problems for the field of therapy for depression generally.

It has also become evident in self-control research that the original stages may not serve well for describing the separate processes involved in self-control (Rehm, 1988). For example, some of the studies often cited as evidence for

negative self-monitoring in depression (Wener & Rehm, 1975; Nelson & Craighead, 1977) are actually studies of incidental memory rather than of self-observation. It would be conceptually clearer to separate self-monitoring into selective allocation of attention and a variety of inference or judgment processes. Depressed persons may choose to focus on negative events that they perceive with accuracy. Negative bias occurs in situations of ambiguity in which interpretation, inference, or judgment is involved. Estimation of numbers of negative events, self-evaluation, and attributions are all interpretive inferences that may evidence negative biases in depression when they pertain to self.

The concept of self-reinforcement has frequently been criticized (Catania, 1975), in part because of the difficulty of demonstrating in the laboratory a functional effect of a self-administered reinforcer. Alternative models of self-regulation may be desirable in order to account for the ways in which inference get translated into action. It may be more appropriate for a model applicable to depressive psychopathology to consider how people problem-solve and plan, based on biased inferences, negative bias in recall, unrealistic standards, and negative expectancies. Rehm and Naus (in press), in a paper discussed in the next section, presented one example of an approach to developing such a model.

COGNITIVE THEORY

Beck's Cognitive Theory

Aaron T. Beck developed a cognitive theory that initially focused on depression and has been expanded to other areas of psychopathology and psychotherapy. Beck became dissatisfied with his psychodynamic training because he felt it did not adequately account for clinical and research phenomena he was seeing. He read George Kelly's *The Psychology of Personal Constructs* (1955) and was attracted to the cognitive conception of unique construct systems through which each individual construes the world. From modern cognitive psychology he adopted the theoretical construct of "schema." Schemata are structural units of stored information that also function to interpret new experience. They act as templates against which new information is compared and incorporated. Schemata vary from representations of simple concepts (e.g., a chair schema operates in the simple act of identifying an object as a chair) to complex interpretive rules (e.g., applying a schema about hotels allows a person to see that the bellhop is hesitating because he expects a tip).

Beck's (1972) theory defined depression in cognitive terms. He saw the essential elements of the disorder as the "cognitive triad": (a) a negative view of self, (b) a negative view of the world, and (c) a negative view of the future. The depressed person views the world through an organized set of depressive schemata that distort experience about self, the world, and the future in a negative

direction.

A number of typical forms of cognitive distortion were identified early in the development of the theory (Beck, 1963). Arbitrary inference involves the arbitrary assumption that some negative event was caused by oneself. For example, a friend appears preoccupied and the depressed person thinks, “What did I do to make him angry with me?” Selective abstraction occurs when the person focuses on the negative element in an otherwise positive set of information. An employer, while congratulating the employee on a promotion, says, “Don’t underestimate your future with this company.” The depressive employee thinks, “She thinks I have no self-confidence.” Magnification and minimization involve overemphasizing negatives and underemphasizing positives. Inexact labeling involves giving a distorted label to an event and then reacting to the label rather than to the event. The conversation with the boss is labeled a “criticism session,” and the person anticipates being fired.

It is a basic tenet of the cognitive approach that a schematic interpretation always mediates between an experience and the emotional response to that experience. The negative, distorted cognitions that a person has in a particular situation are termed “automatic thoughts.” They are automatic in the sense that the person is not aware of the interpretive process and may not be aware even of the thoughts themselves but only of the emotional consequences of the thoughts. These specific thoughts can be distinguished from underlying assumptions, which

are more basic interpretive rules that form the automatic thoughts. In depression, the theme of the automatic thoughts is the perception of loss. Loss is the cognition that relates to depression. In contrast, perceptions of gain produce euphoria, perceptions of danger produce anxiety, and perceptions of offense produce anger.

Depressive schemata are activated when a major loss is perceived. An organized set of negative schemata, formed earlier in life when major losses were experienced, replaces nondistorted schemata when the person becomes depressed, and represents organized and elaborated views of self, the world, and the future. The negative schemata may be replaced in use by more realistic schemata under usual life circumstances, but they remain intact as "latent" schemata with the potential of reactivation under circumstances of loss. With time and the improvement of circumstances, these schemata may again become latent unless they are modified by some form of intervention. The overgeneralization that occurs in depression is due to the replacement of one broad network of schemata with another.

Research

A great deal of research can be considered relevant to Beck's cognitive theory of depression. A few studies will be cited that illustrate the major issues involved. The idea that depressed persons have a negative cognitive bias is widely demonstrated. When looked at in terms of the cognitive triad, it is clear that bias

about self is negative, relative to interpretations of the behavior of others (Shrauger & Terbovic, 1976). A frequent and interesting finding is that these judgments of self seem more accurate than those of nondepressed persons (Alloy & Abramson, 1979; Lewinsohn et al., 1980; Roth & Rehm, 1980; Roth, Rehm, & Rozensky, 1980). People may have a positive set of expectations about their behavior that is offset during periods of depression.

Negative interpretations of the world have received less research attention, but it is clear that depressed persons perceive a higher frequency of negative events in the world and see problems as more severe and more difficult to cope with (Kuiper & MacDonald, 1983). Negative interpretations of the future have been assessed in a number of studies, in terms of expectancies for personal success and slower adjustment of these expectancies following positive feedback (Abramson et al., 1978). It is notable that negative interpretations of self are usually referenced to current and past functioning and depressed persons are negatively biased in memory about the past. "Negative view of the future" in Beck's cognitive triad is therefore not exclusive of past and present.

A basic premise of Beck's approach is that cognition intervenes between an event and the affective response to that event. One line of research relevant to this idea has been studies of mood induction by cognitive methods, for example, where subjects read a series of negative statements to induce a sad mood (Velten, 1968). Debate centers around the mechanisms of mood induction and how well they

validate the premise. Zajonc (1980) argued that affect is the primary response in some cases but the issue may revolve around definition of cognition (Rachman, 1981, 1984).

The question of cognitive vulnerability to depression has been addressed in several ways. The Automatic Thoughts Scale (Hollon & Kendall, 1980) was devised to assess cognitive symptoms of a current depression. The Dysfunctional Attitudes Scale (Weissman & Beck, 1978, November), on the other hand, was devised to assess underlying assumptions that should represent an enduring trait of vulnerability to depression. Studies using these and other scales assessed patients during and after episodes of depression. Results were not consistent as to whether the trait measures remain deviant while the symptom measures improve (Eaves & Rush, 1984; Lewinsohn, Steinmetz, Larson, & Franklin, 1981). Prospective studies from this perspective have been infrequent and current evidence does not support the predictive value of measures of cognitive assumptions (O'Hara, Rehm, & Campbell, 1982).

It has been argued that "latent" depressive schemata may only be detected when the person is actually faced with a perceived loss and, therefore, a kind of challenge test will be necessary to demonstrate cognitive vulnerability. For example, negative schemata may not be manifest unless an adverse event sufficient to arouse sad affect activates them. A challenge test might assess reactions to failure and predict that the more extreme reactors in terms of altered

perceptions of self, the world, and the future would be most susceptible to reactive depression. Evidence on this point to date is mixed (Blackburn & Smyth, 1985).

Therapy

Much of Beck's thinking developed in the context of clinical work with patients. Cognitive therapy developed along with the relevant theory of depression (Beck, 1976; Beck, Rush, Shaw, & Emery, 1979). Cognitive therapy is a complex collection of techniques that share the goal of making interpretations of events rational and realistic. Typically, therapy consists of a sequence of techniques focusing on behavior, then on automatic thoughts, and then on underlying assumptions. Behavioral techniques are sometimes used to get patients functioning to a level where they may better test out cognitive distortions. Patients are taught methods for identifying and recording automatic thoughts in their daily lives and are aided in refuting them. As automatic thoughts are reviewed, the underlying assumptions they represent become more clear and the therapist can use a variety of techniques to get patients to examine the rationality of their assumptions and to replace them.

The therapy relationship is seen as one of collaborative empiricism, whereby the therapist collaborates with the patient in identifying hypotheses and assumptions and in devising empirical tests of their validity in real life. As part of

the therapy, the therapist closely structures sessions and frequently confirms with the patient the goals set and the progress made within sessions.

Cognitive therapy is the most thoroughly researched of the cognitive-behavioral approaches to intervention in depression. Several reviews are available (e.g., deRubeis & Beck, 1988; Dobson, 1989; Rehm & Kaslow, 1984; Williams, 1984). Most notable of the findings is that cognitive therapy has been demonstrated to produce effects equal to or superior to tricyclic antidepressants in ameliorating depression (Beck, Hollon, Young, Bedrosian, & Budenz, 1985; Blackburn, Bishop, Glenn, Whalley, & Christie, 1981; Murphy, Simons, Wetzel, & Lustman, 1984; Rush, Beck, Kovacs, & Hollon, 1977). It is also notable that the effects tend to be better maintained in terms of reducing future episodes of depression. Cognitive therapy also does as well as, or better than, other cognitive-behavioral approaches. Research on the mechanisms of therapy from the cognitive perspective is only beginning to be done.

Comment and Recent Developments

Beck's theory has been very influential in clinical psychology. It developed rapidly as a school of psychotherapy with research and application far beyond depression. As a theory it borrowed terms and constructs from cognitive psychology, without necessarily bringing with these terms some of the more specific theoretical distinctions and debates of cognitive science. Nonetheless, it

facilitated the connection between clinical and cognitive psychology. Clinical psychology has often borrowed models and metaphors from more basic areas of psychology, and today cognition and memory are the mainstream of experimental psychological research.

New areas of research are developing which establish further connections between the psychopathology of depression and cognitive research. Self-referent encoding is the phenomenon wherein information about oneself is encoded and stored with existing self-schemata acting as an organizing structure. In depression, negative information is remembered better, presumably because it has been organized by predominantly negative schemata (Derry & Kuiper, 1981).

The topic of emotion and memory is rapidly expanding in both psychopathology and cognition (Blaney, 1986). Mood-congruent recall is the phenomenon whereby current mood state (episode of depression, natural mood, induced mood, and so on) influences retrieval such that memories with a similar emotional tone are more likely to be recalled (more frequently, more accurately, and with a shorter latency). When depressed, people are more likely to recall sad events and less likely to recall happy events. The related phenomenon, emotional state related learning, involves the laboratory demonstration that material learned while in one mood state is better recalled in the same mood state and that an alternate mood state interferes with recall. For example, neutral word lists learned in a sad mood are best recalled in a sad mood when other potentially

interfering material has been learned in a distinctly different mood (Bower, 1981).

The effect of these new areas of research is that models are beginning to be developed that employ these concepts to explain elements of depression. Depression theory is being brought closer to cognitive psychology. Ingram (1984) discussed information processing in depression and the ways in which loss activates affective networks in memory, which in turn bias successive information processing. Teasdale (1983) developed a model in which individual differences in prior accumulated experiences of depression determine the nature and course of subsequent depression because stronger and more elaborate depressive structures are activated. Rehm and Naus (in press) attempted to describe the way in which depressive schemata about oneself may develop and how they might influence experience through the development, maintenance, recovery from, or treatment of an episode of depression. They discussed how mood can influence problem solving and planning by influencing standards and prior experiences accessed in that mood. These various papers brought the field closer to a new generation of cognitive theory in depression.

SUMMARY—AND FUTURE DIRECTIONS

For the past two decades, four theories have been prominent in accounting for the phenomena of depression from the learning or cognitive-behavioral perspective. Each approached the problem of the overgeneralized response of the depressed person to adverse circumstances. Lewinsohn explained the reduction in interrelated behaviors as the response to a loss or lack of response-contingent positive reinforcement from an important and generalized reinforcer. Seligman described the dimensions of overgeneralization in terms of a depressive attributional style leading to internal, stable, and global perceptions of helplessness following aversive events. Rehm postulated broad self-management skills that are inadequate to overcome the environment's failure to reinforce efforts toward long-term goals. Beck's cognitive theory hypothesized an extensive negative view of the world and self that is reactivated when loss is perceived.

Each of these theories was influential in shaping and developing research topics in the psychopathology of depression. The data generated influenced the theories, and revisions to the theories were presented. Each theory faced the question of whether the hypothesized deficits are actually vulnerability factors existing prior to and causally related to depression or whether they are merely concomitants or effects of depression.

Therapy conceptualizations and techniques have been developed from the theories. These therapies have been the focus of a growing body of therapy

outcome research in depression. Evidence for the efficacy of these approaches now seems well established. Therapy research seems to suggest that each therapy program is effective but does not differentiate among them. Also, research has repeatedly failed to find effects specific to hypothesized deficits or to targeted outcome measures. These findings raise questions relevant to theory. New developments in theory need to take into account the fact that so many therapy strategies seem to be helpful in ameliorating so many components of the disorder.

The current theories seem to need major revision and expansion. What might be considered first drafts of new theories have appeared in the literature. Lewinsohn, Hoberman, Teri, and Hautzinger (1985), Abramson, Alloy, and Metalsky (1988), Abramson, Metalsky, and Alloy (in press), Ingram (1984), Teasdale (1983), and Rehm and Naus (in press) presented new models that attempted to expand the purview of the earlier theories. All of the current approaches are developing in a more cognitive direction and are coming closer to recent advances in cognitive psychology. Models that formerly addressed depression alone are beginning to be expanded to consider how the constructs of the theory might differentiate other emotions and disorders.

The theories also need to encompass new knowledge about depression, coming from other fields. Epidemiological data suggest that cultural changes may be producing a greater risk for depression among young people than in prior generations. Theory should be able to address these mechanisms in society

(Seligman, 1989). Studies of coping and stress expand our knowledge about the ways in which ongoing stressors may have an impact on mental health and vice versa. Biological correlates of depression are being identified and need to be taken into account in psychological theories. Biological, environmental, and psychological factors seem to be related like loosely interconnected gears. The slowing down or speeding up of any one gear has an effect on the total machine. We need integrative models that suggest how biology, environment, and psychological predispositions interact in the etiology, maintenance, and resolution of depression. Significant advances have been made but new advances in cognitive-behavioral theory can also be expected.

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