Behavior Modification of Depression: A Review of Theories and Research

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BEHAVIOR MODIFICATION OF DEPRESSION:
A REVIEW OF THEORIES AND RESEARCH

BY

MARIA CRISTINA LEMA de CARDOZO

SPECIALTY PAPER

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Abstract

There is a need to find effective ways to treat depression, due to its high incidence and to the severity of its consequences. The first psychological treatment of depression came with the advent of psychoanalysis, but today the theories dealing with the etiology and treatment of depression range from genetic and biological approaches to an existential conceptualization.

While briefly reviewing these various current approaches, the primary purpose of this paper is to present the behavioral/social learning approach to the understanding and treatment of depression. The specific theoretical formulations, methods of assessment and treatment approaches characteristic of the behavioral/social learning approach will be reviewed. Illustrative clinical and research studies concerning therapeutic outcomes are evaluated.

The results indicate that while behavioral approaches appear to be effective in the treatment of depression, additional systematic research must be conducted before final judgements can be made as to whether behavioral treatment of depression will become the treatment of choice.
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Introduction

Depression is one of the oldest and most common mental disorders. The behaviors characteristic of depression have been recognized and described at least as early as 1500 B.C. and the incidence of depression has been increasing relative to other mental disorders since the 1950's (McLean, 1976). Depression now rivals schizophrenia as the nation's number one mental health problem. Secunda et al. (1973) suggests, after reviewing three independent studies, that 15% of a randomly sampled normal population on a national basis may have significant depressed features, other estimates suggest that four to eight million Americans may be in need of professional care for depressive disorders (Seligman, Klein & Miller, 1976).

The preceding figures give us an indication of the prevalence of this disorder. However, the urgency in finding adequate treatment modalities is not only due to its high incidence but to its consequences. Mental health professionals consider depression to cause more total suffering and anguish in the world than any other single medical or psychiatric disorder. Also, depression has a lethal
potential due to the high correlation between depressive reactions and suicide. Eighty percent of reported samples of suicidal patients have been diagnosed retrospectively as having suffered from some form of depression (Secunda et al. 1973).

One of the problems confounding an analysis of the various approaches is that there is not a universally accepted definition for the term "depression". This word has been used to describe many things: a mood state, a grief reaction, a symptom of another disease, or a syndrome. Most normally functioning people report some periods of depression in their lives, (Wessman and Ricks, 1966) and their experiences are often similar to the symptoms reported by persons who are clinically depressed. However, there are many patients who report symptoms which involve such an extreme experience of despair that their depression sounds quite foreign to everyday experiences. A severely depressed person may report that he is the devil; that he has committed unspeakable, horrible crimes, or that he is already dead. When a hallucinatory or delusional quality is present the depressive reaction would be called psychotic, as opposed to neurotic.

When the depression is clearly linked to an external
precipitating event (e.g. departure of a loved one), it is called exogenous. When depression appears with no precipitating external cause, it is called endogenous. However, there is still some question as to whether endogenous depression is truly free of precipitating events. This controversy will be dealt with at length when discussing the "life stress events theory" of depression. To treat depression effectively, an understanding of its etiology, symptomatology and current methods of treatment is essential.

Even though the role of genetic, constitutional, and organic factors in the etiology of depression have been proposed and occasionally demonstrated by various authors such as Kraeplin (1921), Mayer, Gross, Slater and Roth (1968) and Klerman (1974), there is increased evidence that implicates the role of psychosocial factors in the causation and maintenance of all forms of clinical depression. Lewis (1934), Mayer (1948,1963), Lewinsohn (1974), Seligman (1973), Beck (1967), Lazarus (1968) and Ferster (1973) among other authors. The emphasis of this paper is primarily on these psychosocial factors.

There is much controversy regarding the etiology, maintenance and treatment of depression, but most theories agree that it is an affective disorder and some agreement
exists as to the prevalent symptoms. Proponents of the behavioral/social learning approach such as Seligman (1974) and Ferster (1973) have attempted to explain this "affective illness" as "a set of maladaptive behavioral responses elicited by uncontrollable aversive stimuli or by loss of reinforcement - that are additionally maintained by the rewards of the sick 'role'" (cited in Akiskal & McKinney, 1975, p. 285). The maladaptive responses found in depression can be divided into four categories: mood disorders (blue, despondent, hopeless, discouraged, fearful, worried, irritable); thought disorders (lowered self-esteem and self-reproach, poor concentration, slow thinking, mixed up thoughts, recurrent thoughts of death or suicide); changes in motivation (psychomotor retardation or agitation, diminished libido and withdrawal from usual activities) and physiological disorders (anorexia or hyperphagia, insomnia or hypersomnia, loss of energy with easy fatigability). Not all the symptoms mentioned above occur in every case of depression, and no one symptom by itself is sufficient to warrant the diagnosis of depression.

Before discussing the behavioral/social learning theory a historical review of the approaches to the etiology and treatment of depression will be presented; then the focus
will be on the most important theories and techniques within the social learning framework that attempt to explain and modify depressive behaviors. Within the past ten years, there has been a significant increase in the literature, regarding behavioral formulations of depression, behavioral assessment and consequently behavioral treatment modalities. The focus of this paper will be: First, on the theoretical formulations of each behavioral model; secondly, the importance of assessment as a way to begin and evaluate a behavior modification program will be made apparent, and a review of existing methods of depression assessment will be presented; and finally, treatment modalities and evaluation of therapeutic outcomes will be made.
An Historical Overview of the Various Approaches to Understanding and Treating Depression

The present historical review, far from being comprehensive, will attempt to present the historical antecedents as they have special relevance now, to an understanding of the behavioral/social learning theory. Several authors [Lewis, Whitewell, and Zilboorg (cited in Scher, 1971)] have provided historical reviews of the approaches to depression and their work will be integrated with observations made by this author writing from a more behavioral perspective.

Around 400 B.C. Hippocrates gave the earliest written account of "melancholia" the early term for depression, which means "black bile." Thus, the early accepted etiology was an abundance of black bile moving upward toward the brain (Seligman, Klein and Miller, 1976). Arataeus (first century A.D.) described melancholia as "a lowness of the spirits without fever..." He described a young man affected of melancholia who was cured by falling in love with a girl. "The physician could not cure him but love did." He also described a case of a "joiner" (carpenter) who recovered by concentrating on tasks in his workshop (all quotes cited in...
In the sixteenth century this description of melancholia was provided by Felix Platter: "A kind of mental alienation in which imagination and judgement are so perverted that without any cause the victims become very sad and fearful." [This particular definition will be recalled when Beck's cognitive theory of depression is discussed later (Beck, 1967, 1970a, 1970b, 1974).] It wasn't until the nineteenth century that a purely psychological treatment of mental illness was introduced with the advent of psychoanalysis.

Psychodynamic Perspective

Karl Abraham, utilizing many Freudian concepts, was the precursor of the psychoanalytic idea of depression. In this model, depression represents the introjection of hostility resulting from the loss of an ambivalently loved object. He hypothesized that after a disappointment in love, the ego becomes identified with the abandoned love object. In this case, self reproach can be seen as an attempt to punish the incorporated love object. The depressive's low self-esteem, according to Freud, is what differentiates mourning from melancholia. In mourning there is a loss of an external object; in depression the loss involves the ego.

More recent psychoanalysts, like Bibring (1953), broke with the classical Freudian theory. He considered the feeling of helplessness in relation to one's goals to be the central feature of depression. He defined the disorder as, "the emotional correlate of a partial or complete collapse of the self-esteem of the ego, since it feels unable to live up to its aspirations (ego ideal, superego) while they are strongly maintained" Bibring, 1953, p. 26). Other neo-Freudians, such as Bowlby (1960), minimized the role of suppressed rage and suggested that the anxiety experienced due to separation from the parents is the important etiological factor in anaclictic depression. This depression results from the loss of another or others upon whom one is dependent. Several studies with animals (all cited in Akiskal & McKinney, 1975) such as those by McKinney, Suomi and Harlow (1973), Kaufman (1971), and Hansen and Harlow (1962) found support for Bowlby's theory.

In human beings, parental loss (especially in the age intervals zero to five and ten to fourteen years) seems to be a factor in the predisposition to depression. This is probably due to the fact that during these age periods children are more dependent on the parents for approval and
recognition. Between six and ten years of age, the child becomes independent for the first time when he becomes involved in school activities and begins to make friends outside the home. At about 10 years of age, the pre-adolescent crisis begins. This makes him turn once again toward the parents for guidance and support. In the adolescent period, peer approval is valued more than parent approval. Consequently, losing the parents during those periods in which their presence is more critical for the child, has more debilitating effects than at any other time. This is indicated in various studies of childhood bereavement and adult depression, and in systematic studies that related parental deprivation experiences to the onset of depression [e.g. Heinicke, 1973; Brown, 1961 and Spitz, 1945; (cited in Akiskal & McKinney, 1975)].

Few psychodynamic theories of depression have been subjected to systematic study. The classical formulations are not based on clinical observations and are not reducible to operational definitions that could provide the basis for controlled investigation. Concepts such as "orality" and "repressed hostility" can be applied to a diversity of clinical disorders, and are not specific to affective disorders. In the more recent theories, however,
many commonalities can be found with the behavioral theories; these similarities will be made evident in the discussion of the behavioral theories below.

The psychoanalytic treatment of depression is directed toward having the patient come to a fuller understanding of the events that predisposed him to depression. It focuses on three major factors: early childhood experiences in which the patient may have actually suffered or fantasized a loss of a significant other; development of feelings of low self-esteem and the events that led to a diminishing of self-confidence, and an appreciation of his capacity for anger. All this is accomplished through free association, interpretation of resistances and working through the transference.

Humanistic Existential Perspective

The humanistic and existential movements have been characterized by a phenomenological approach which emphasizes the importance of the individual's subjective "experiencing". The content, meaning and significance of one's experience plays a major role in understanding one's existence in the world. Heideger speaks of "dasein" or "being there". He states that a person can only come to an appreciation of his place in the world by being in touch with his
feelings and moods. Thus, mood, be it depression or elation, is an indication of the significance of one's total condition (Binswanger, 1958). Binswanger also notes that in 1923, Minkowski describes melancholic persons as being those for whom the experience of time was slowed or arrested. Temporality and spaciality are important aspects of a person's "being-in-the-world". The depressive person tries to "fill up time" which may seem meaningless and empty. He also feels that space is altered, appearing bleak, empty and dark. Binswanger explained depression in terms of the experiences by which a person fills his time.

For the existentialists, anxiety is the experience of the threat of non-being. The depressive is seized with intolerable "angst" or existential anxiety, knowing that he is not living fully in the moment. He feels guilty for not fulfilling his potential and for failing to make choices. He does not face the fact that one's life is one's own responsibility (May, 1958). To the existentialist depression is the result of living an inauthentic existence.

The role of the therapist is to try to understand the personal experiencing of the patient in its entirety, his "umwelt", or external world, his "midwelt", or interpersonal world, and his "eigenwelt" or inner world. The therapist
guides the patient through an exploration of his feelings of being burdened by the demands of the environment, and unhappiness with his interpersonal affairs, as these are reflected in the sadness and despair that dominates his experiencing. The person has to experience this despair in order to be able to move beyond his sadness, but most importantly, he has to take responsibility for these feelings. The patient is not allowed to dwell into his past except in so far as it gives meaning to the present. The therapist is more concerned with the patient's projection of himself into the future. The depressive is blocked in the flow of his experiencing and the task of therapy is to have the patient fully know his feelings, no matter how painful those may be, and thus be free to move toward a more productive and satisfying life. The relationship between the patient and the therapist is a "real one" which serves as a catalyst for growth toward the patient's self actualization.

The humanistic-existential formulation of depression is filled with concepts which do not seem to lend themselves to systematic inquiry or to operational criteria (May, 1958). This approach relies on information derived mostly from introspection. Therefore, it is not amenable to objective verification and measurement which are the
basis for scientific research. Furthermore, the idealistic goal of bringing the person to self-actualization is unreachable in the short period, (8 sessions on the average), during which a client comes for treatment to a mental health facility.

Behavioral and Cognitive Perspective

The subject of depression has been a relatively neglected topic in the behavior modification literature until fairly recent years. This is probably due to the fact that "the term depression is elusive and ubiquitous," Lewinsohn, Weinstein and Shaw, (1969, p. 231). Sen (1974) explains, however:

It is precisely such a situation which the Behavioral therapist seeks to change by introducing operational concepts and methodology of behavioral analysis in terms of mutual interdependence of environmental stimuli, responses and reinforcements (p. 53).

The behavioral model of depression is based on the theories set forth by Pavlov and Skinner. Pavlov's work on conditioned reflexes is one of the principal sources of behaviorist therapeutic models and techniques. He stressed the importance of exogenous influences in what he called "experimental neuroses." In his experiments with dogs, he demonstrated the relationship between certain experimental
variables and inhibitory neuroses, similar to depression.
(For detailed explanation of these experiments see Sen, 1974 p. 53, 54). Experiments were based on the classical conditioning model, in which an originally neutral or indifferent stimulus repeatedly paired with a reinforcer comes to elicit a response. A reinforcer is any agent such as food, which reduces or partly reduces a need. Thus, the dog naturally salivates (unconditioned response) to food in the mouth (unconditioned stimulus). When a neutral stimulus such as a bell (conditioned stimulus), is presented with the food, it elicits salivation, (conditioned response). He introduced some experimental variables such as a delay in the delivery of the reinforcement after the conditioned stimulus has been presented, and noted different types of chronic nervous disturbances. From his experimental findings and his observations of melancholic patients, he deduced that "the intensity and duration of experiences resulting from changes in a person's habitual way of life and occupation or loss of near ones, may lead to melancholia, if he belonged to an inert or inhibitory type" (Potnov & Fedotov, 1969; as cited in Sen, 1974, p. 54). The similarities between "inhibitory neuroses" and depression are apparent in two aspects: 1. The experimental
laboratory conditions have parallel environmental situations i.e. there are many instances in real life when there is delay between the environmental or conditioned stimuli, (cues for hope, expectation) and the attainment of the reinforcement. This could elicit an explosive reaction in a person who is more excitable or extroverted, or could lead to a decrease in the frequency of behavior in a person who is of an introverted type.

2. The behavioral characteristics found in inhibitory neuroses were: general inactivity, lack of interest in the surroundings, loss of habit patterns, loss of appetite, decrease in sexual activity, social isolation and somatic symptoms. However, other depressive characteristics were not observed, e.g. verbal expressions of sad thoughts and guilty feelings, suicidal ideas or attempts. These discrepancies may in part reflect the differences between human beings and animals.

Skinner is the father of operant conditioning theory. He disagrees with Pavlov's theories on two issues: first he states that,

a major portion of human behavior is not involuntary nor elicited by stimuli in the sense of reflexive reactions. Rather, many behaviors are emitted spontaneously and are controlled primarily by their consequences (Kazdin, 1975, p. 15).
Secondly, he states that traits, such as introverted and extroverted, are useful in describing patterns of behavior. However, these traits are inadequate as explanations of behavior for at least three reasons: 1. The trait which has been inferred from behavior is used to account for behavior. 2. Evidence suggests that individuals do not always perform consistently across a variety of situations and over a period of time, as would be predicted from the trait position. 3. The antecedent conditions which explain traits are not explained, therefore, the actual behavior is left unexplained.

Skinner seeks to establish the laws of behavior through the study of operant learning. An operant is an emitted response which can be studied independently of the stimulus conditions which give rise to them, in many cases the stimulus is unknown. His experiments in the laboratory consisted in placing animals inside of what has come to be known as a Skinner box. In this box the animals were maintained free from distracting stimuli, and received reinforcement contingent upon emitting the proper operant. The fundamental law of operant conditioning is that "if the occurrence of an operant is followed by the presentation of a reinforcing stimulus the strength (of the operant
response) is increased" (cited in Chaplin, 1968, p. 459).

Skinner's theory has been extended into the field of psychotherapy. He states that,

Psychiatric or potentially psychiatric patients may be characterized as having a repertoire whose performances are not producing the reinforcements of the world: because too much behavior is being punished; because nearly all of the individual's behavior is maintained by avoiding aversive consequences rather than producing positive effects; because the projections of the environment are so distorted that the individual's performances are emitted inappropriately; or a combination of all of these... (cited in Ferster, 1974, p. 29, 30).

The operant reinforcement model of depression is closely related to Skinner's general theoretical ideas. According to this model, depression is a weakening of behavior brought about by a diminution in the amount of positive reinforcement. Thus, the foundations of all the behavioral models of depression are based on the theoretical principles set forth by either Pavlov or Skinner.

The primary focus in therapy is on the "specific behaviors" which are distressing to the individual, and the treatment strategies are directed toward definable and measurable behaviors. By changing the behaviors through the management of the contingencies it is hypothesized that one can alter the mood state.
The affective disorder which is the basic factor in depression has become a legitimate class of behaviors, especially for the Cognitive Behavioral model group. Beck (1967) studied the relationship between specific feelings and specific thoughts and identified the thoughts which are associated with the depressive affect, those thoughts centered around the idea that the individual was deficient in some way. Furthermore, the specific types of depressive affect were generally consistent with the specific thought content, i.e. the thought of being inferior elicited the feeling of humiliation. Thus the intensity of the affective disorder can be assessed and potentially modified through the evaluation and modification of the patient's thoughts.

Although the main focus of therapy is placed on the antecedents and consequents of the behaviors which are occurring now, the behaviorists also highlight the importance of the individual's history. The specific environmental conditions, including interpersonal situations, determine the predominant types of reaction such as excitatory or extroverted and inhibitory or introverted. Also, of concern are the prior conditions which have originated depressive reactions at different times, and tended to lengthen and increase the intensity of depressive reactions.
of the patient.

The behavioral approach departs from the traditional conception of behavior by rejecting inferred motives, hypothesized needs, impulses and drives which supposedly explains behavior; rather, emphasis is placed upon environmental, situational and social determinants which influence behavior (Kazdin, 1975, p. 11).

An evaluative study comparing the three major treatment modalities - psychodynamic, humanistic and behavioral is beyond the scope of this paper. Furthermore, conclusive evidence, in regard to which model is most effective in treating depression, could not be found due to the fact that each one of these therapeutic models is predicated upon different assumptions regarding the nature of depression. Also, there is a lack of systematic research, and adequate assessment of therapeutic outcomes. These factors make it impossible to determine the superiority of effectiveness of one treatment modality over the others.

The role of neurophysiological factors in the etiology and maintenance of depression, and the pharmacological treatment of this illness can not be overlooked by any mental health professional who deals with depressive patients. However, this aspect of the etiology and therapy of depression is also beyond the scope of this paper.

Having presented an overview of the different theories
on depression, we are now ready for a detailed examination of the specific theories within the behavioral/social learning model.
Behavioral and Cognitive Theories of Depression

Operant Reinforcement Theory

The formulation of depression that has received the most attention in the literature is centered around the notion that depression is a function of inadequate reinforcement. Within this concept, there are several variants: Loss of reinforcible behavior, proposed by Ferster (1973); reduction of reinforcement, proposed by Lazarus (1968) and Burgess (1968); loss of reinforcer effectiveness, proposed by Costello (1972) and reduced frequency of social reinforcement, proposed by Lewinsohn (1974a).

Ferster (1973) was the first advocate of the theory which explains depression as the result of a reduction in the amount of positive reinforcement that an individual receives. He defines depression as a reduction in certain kinds of adaptive responses or activities resulting from lack of positive reinforcement. This reduction in behavior may be brought about by any or all of the following: large and sudden changes in the environment (e.g. change in residence) which may inhibit responses, even though these behaviors are still within the repertoire as potential action.
2. **Engaging in aversive or punishable behavior** (i.e. complaining) which limits the opportunity for receiving positive reinforcement.  

3. **Variable schedules of reinforcement in which an increase in the ratio of responses is sometimes required in order to elicit reinforcement** (the less often a behavior is reinforced the lower its frequency would be). If there is either no contingency between adaptive behavior and positive reinforcement or the depressive behavior itself is reinforced, the behavioral conditions for eliciting and maintaining the depressive behavior are present. In 1974, Ferster stated that depression does not appear to be a single functional category.... every process known to learning theory (amount of reinforcement, aversive control, prepotency, stimulus control, differential reinforcement, states of the organism, and the effects of preaversive stimuli) can increase or decrease the frequency of important items in the person's repertoire (p. 52).

Thus, a disruption in the normal repertoire can be caused by a multiplicity of factors operating in infinite combinations.

He demanded a topographic and a functional analysis of behavior. A topographic analysis simply describes what has occurred without reference to antecedents or consequences, (i.e. looking at the frequency of the depressed person's
activity as compared to those of a person who is not depressed). Ferster believes that the retardation of psychomotor and thought processes, with a notable reduction of previously successful behaviors, is the most important characteristic of depression. He considered the existence of thought and mood disorders to be secondary. A functional analysis, which he considered most important, describes the relationship between the behavior and the environment. The functional analysis of the variables in the environment that control the emission of depressive behaviors is critical in explaining the etiology, and is especially important in determining the therapeutic approach to depression since it specifies environmental controlling events which can be manipulated.

Lazarus (1968) explained depression as "a function of inadequate or insufficient reinforcers" (p.84). This could mean a reduced frequency of reinforcement, a poor quality of reinforcement, or an insufficient total amount of reinforcement. The depressed person is considered to be on an "extinction trial" due to the loss of significant reinforcers. Besides the loss of a significant love object, he considers the loss of other reinforcers such as money, love, status, prestige, recognition, security, etc.
to be important in bringing about a decrease in the frequency of the behaviors. Basically, depression is considered to be the state in which a person's response frequency or quality diminishes as a function of reduced reinforcement.

Lazarus admits that the specific reinforcement which has been reduced is often difficult to identify. In fact, there are instances in which positive reinforcement appears to increase. It is difficult to explain an individual becoming depressed after a promotion, or a person who retires on a comfortable pension and becomes depressed. However, according to Lazarus, a reduction in reinforcement has taken place, although the factors which are operative are more subtle.

If one considers money or prestige as the reinforcers in the cases mentioned above, we would agree that an increase in reinforcement has occurred. However, many other reinforcers may have been lost in the process like the love and attention the person used to receive from his coworkers, etc. If this lost reinforcer is more subjectively valued by the person than money and/or prestige, depression may occur.

More recently, Lazarus became one of the advocates
for a "variable cause model" of depression which will be discussed later. Lazarus also suggests that depression is maintained by the reinforcement of maladaptive behaviors. Burgess (1969) also places special emphasis on the "secondary gain" aspect of depression. She distinguishes between two classes of behavior; a broad performing behavior class which includes active, task oriented responses and a depressive behavior class which includes retarded motor responses, sad face and body appearance, mournful verbalizations, etc. "As the frequency of performing behaviors begins to diminish, the very absence of those behaviors becomes the occasion for reinforcement" (p. 193).

The concept of secondary gain is related to the idea of social reinforcement. The attention given to the patient for "sick" behavior may reinforce that behavior and thus it is more likely to occur in the future. In addition the interpersonal contingencies of sympathy and concern maintain the depressive behavior. This theory of secondary gain does not explain the antecedents of the behavior, but it explains how depressive behaviors are maintained by the consequences, furthermore, it has great implications for treatment. As Benner points out, "...a high degree of secondary gain may result in the fact that the patient un-
consciously prefers to keep his neurosis rather than lose it since his symptoms have become valuable to him" (Liberman & Raskin, 1971, p. 517). Thus, the theory of secondary gain is important because it accounts for both the maintenance of behavior and the difficulties in extinguishing it. Lewinsohn (1976) focuses on the aversive effects of depressive behaviors; even though depressed individuals may get a lot of sympathy at the beginning of their symptoms, very soon others will find these behaviors aversive and will avoid them. This in turn decreases the rate of positive reinforcement that the person receives, thus, accentuating the probability of depression. In this case the decrease in positive reinforcement maintains the depressive behavior.

Costello (1972) proposes an alternative formulation, according to which the fundamental mechanism in depression is not loss of reinforcers, but, a general loss of reinforcer effectiveness. Loss of reinforcement effectiveness can be seen in depressed people who complain of a loss of interests, appetite and sexual desire. This could be due to "endogenous biochemical and neurophysiological changes and/or the disruption of a behavioral chain" (p. 242). An example of a disruption in a chain of behaviors is a situation in which a person who used to bowl regularly and derived
much pleasure from it loses interest when he is prevented from smoking in the bowling alley. This occurs even-though smoking was not the primary reinforcer, and he may stop bowling altogether. But, as Lazarus (1972) points out, it is difficult to determine whether loss of reinforcer effectiveness is cause or effect of depression. In other words, does the person lose interest in things when he is depressed or is the lack of effective reinforcers what originates the depression, or could it be a combination of both?

Lewinsohn (1974) suggests that personal traits, i.e. lack of social skills, as well as environmental events may be responsible for the low rate of positive reinforcement. With colleagues, he devised a system for coding behavior in order to test the hypothesis that depressed patients are lacking in social skills, that is the inability to emit behaviors that are positively reinforced by others. They found that depressed persons elicit and emit fewer interactions with other people than non-depressed persons, that the messages they emit are shorter and the timing of those messages is inappropriate and that they interact with a progressively decreasing number of people. Lewinsohn (1974) identifies three assumptions upon which his formulations of depression are based: 1. depressive behaviors and the
associated disphoric feelings are elicited by a low rate of response-contingent positive reinforcement; 2. this low rate of response-contingent reinforcement is sufficient to account for the occurrence of other components of the depressive syndrome, i.e. low self-esteem, negative outlook of the future, etc.; 3. the total amount of response-contingent reinforcement received by any one is a function of the number of events which are potentially reinforcing, the availability of reinforcement in the environment and the instrumental behavior of the individual.

Lewinsohn's theory of depression recognizes individual differences regarding the predisposition of a person to depression. Individuals differ in their ability to engage in behaviors which will elicit positive reinforcement from the environment. It also accounts for the cases of depression where a decrease in positive reinforcement is not apparent. If an individual has worked hard to attain a goal and the reward turns out to be a weak reinforcer for him, he has worked hard for little. His rate of response-contingent positive reinforcement is low. This will be further explained when discussing the learned helplessness theory. Therefore, when working with depressives it is important to identify, not only the specific positive reinforcement which
Cognitive Distortion Theory

Lewinsohn's conception of depression is more consistent with retarded depression. Beck's cognitive theory of depression deals both with the retardation and agitation aspects of depression. In this theory Beck challenges the view of depression as an affective disorder. He states that the sequence in which perception leads to cognition and emotion in normals exists also in depressives, in other words, cognition determines affect. "Specifically he considers the disturbances of affect and motivation to be the result of negative conceptualizations" (Beck, 1967, pgs. 237, 238). His theory of depression evolved from an initial clinical study, (Beck and Valin, cited in Beck, 1970, p. 170) that indicated that themes of self-punishment occurred with great frequency in the hallucinations and delusions of psychoticly depressed patients. Subsequently, clinical observations of the free associations and dreams of depressed patients in psychotherapy revealed a high frequency of themes of disappointment, frustration, punishment, injury, personal unattractiveness and incompetence. Although these observations were consistent with the original Freudian concept that de-
pression represents a need to suffer or a need for self-punishment, later studies contradicted the Freudian position. A more parsimonious explanation of the data obtained is that the content of dreams, fantasies, ruminations, interpretations and delusions reported by a depressed individual is determined, not by a desire for suffering or self-punishment but by an "idosyncratic cognitive set", according to which experiences are perceived in a negative light. From the behavioral point of view the negative thoughts are explained in terms of their stimuli or consequences, without having to infer them from subconscious motivation.

The prevailing sentiment experienced by depressed individuals is a "sense of loss", irrevocable loss of valued relationships, attributes and opportunities. This hypothesis was confirmed by studying the dreams of depressed patients. It was found that these patients portray the main character in the dream as a "loser"; and their dreams contain themes of low self-regard, loss, deprivation, and frustration in attempting to reach a goal, [Beck & Hurwich (cited in Beck, 1974, p. 17)]. These findings were supported by a more refined study of two hundred and eighteen psychiatric patients which demonstrated that depressed patients reported significantly more dreams with the characteristic themes of loss.

It was also shown that other psychopathological disorders could be distinguished on the basis of typical ideational content of dreams. Anxiety was associated with ideational themes of personal danger, paranoia with persecution, and mania with self-enhancement.

Beck (1967) hypothesized that, in a person predisposed to depression, certain idiosyncratic cognitive patterns become activated when the person is under stress and produce the phenomena associated with depression. These cognitive distortions, involve a negative attitude toward the self, the world and the future. They occur in an individual who has been sensitized by previous unfavorable life circumstances, which predisposes him to over react to related life circumstances.

Subsequent experiences of loss are either misinterpreted or exaggerated and systematic cognitive distortions take place. The most common distortions are: 1. arbitrary inference, which is drawing a conclusion in the absence of evidence; 2. selective abstractions, which is to take a detail out of context, ignoring other important details in the situation, and conceptulizing the whole experience on the
basis of this element; 3. overgeneralization, which is to draw a general conclusion on the basis of a single incident; 4. magnification and minimization, which are errors in evaluation; 5. personalization, which is the tendency to relate external events to himself when there is no connection between the two (Beck, 1974). These cognitive distortions lead to low self-esteem, self-criticism, apathy and sadness.

Beck's explanation of the role of cognitive processes in clinical depression provides descriptive and conceptual understanding of private events, which until recently have been overlooked in the behavioral literature. Other behaviorally oriented authors who stress the role of cognitions: Bandura, Ellis, Meichenbaum and Mahoney state that "an individual's perception of environmental events, rather than the events themselves, often accounts for behavior" (cited in Craighead, Kazdin & Mahoney, 1976, p. 153). These authors also recognize the importance of a positive reinforcement in maintaining non-depressed behavior. But, unlike the operant reinforcement theory, which stresses the reinforcement provided by the environment, they stress the reinforcement and punishment that the individual dispenses to himself.

Another cognitive variable that may be related to depression is the degree to which one believes in internal
versus external control of reinforcement. Individuals who are assessed as internal believe that the events that occur in their lives are dependent upon their own behavior or personal characteristics. Externals, in contrast, are more likely to believe that life events are a result of luck, chance, fate or powerful others (Rotter, 1966). It would appear, that persons who believe that they are responsible for the results of their behavior, would be likely to become depressed when life events do not go well for them. Yet, feelings of helplessness and inability to influence and control one's life is a major concomitant of depression. In a review of related research, Strickland (1974) reports strong empirical support for a relationship between the belief in external control and indices of depression, for both adequately functioning and hospitalized persons. When a person believes that he is doomed to failure in all his efforts, he will become apathetic, dependent on another person, or seek escape, possibly through suicide. In spite of that, the issue of whether cognitive distortions are an effect or cause in depression remains unsolved.

Learned Helplessness Theory

"Learned helplessness" - a belief in one's own helplessness - was first introduced in the literature by
Seligman as an animal analogue of reactive depression. This theory includes many of the factors of depression that other theories have attempted to explain in an isolated manner: 1. "Lowered response initiation" or reduction in the frequency of activity, (including the expression of anger) advocated in the operant reinforcement theory; 2. "negative cognitive set" advocated by the cognitive distortion theory; 3. "lack of aggression" advocated also, by the psychodynamic theory and 4. "norepinephrine depletion and collinergic activity" advocated by the neurophysiological model, (Seligman, Klien and Miller, 1976).

Those symptoms which are characteristic of depression, along with other concomitants, such as loss of libido and appetite, and the fact that it dissipates in time were also found in the learned helplessness research.

From data originally based on animal experiments and subsequently on human experimental analogous studies, Seligman (1973;1975) has proposed that depression is caused by the belief that responding is useless. This belief develops as a result of learning that responding and reinforcement are independent, i.e. whatever you try is ineffective to bring about change, so why bother? Seligman and his colleagues induced a state of helplessness in dogs throug
exposure to inescapable shock prior to escape-avoidance training in a shuttle box. They found a reduction in the number of attempts to escape the traumatic situation, and an impairment in subsequent adaptive learning. That is, after the dog occasionally jumped the barrier or was shown how to escape (by pulling them away from the electrified grill), they failed to understand the connection between escaping and the termination of shock. (For a detailed explanation of these experiments see Seligman et al. 1976, p. 188).

"It is not trauma as such that produces interference with later adaptive responding, but not having control over trauma" (Seligman, 1974, p. 93). This distinction between controllable and uncontrollable reinforcement is central in the learned helplessness theory. The animal phenomena observed in the laboratory by other experimenters, like Pavlov, cannot be applied to human behavior because there were not enough similarities between what is observed in humans and animals in factors such as symptoms (behavioral and physiological), etiology, cure, and prevention.

For example if learned helplessness in animals prevents behavior similar to reactive depression in man and the etiologies of the two are similar, if we discover that the only way to cure learned helplessness is to forcibly expose subjects to responding that produces relief, we can predict that the central theme for therapy
of depression in man should be the recognition that responding is effective in producing reinforcement... (Seligman et al., 1976, p. 187).

Traumatic exposure to helplessness is probably not the manner in which most depressed individuals acquire their sense of hopelessness. Situations such as stressful home environment or the combination of a self-conscious, unassertive individual with an insensitive environment, presumably produce the same belief. Depressed individuals may have also failed to learn adaptive responses to aversive situations. The symptoms which are common to both, depression and learned helplessness, were cited at the beginning of this section. Nevertheless, some other symptoms found in depressives such as dejected mood, feelings of self-blame and self dislike, loss of mirth, suicidal thoughts and crying can not be investigated in animals. Seligman claims that helplessness and depression can result not only from non-contingent aversive stimuli, but also from non-contingent positive reinforcement. Unless, the person believes that his behavior is instrumental in obtaining positive reinforcement, he will not be motivated to emit adaptive behaviors. This explains the depression accompanying retirement, even when the individual is receiving generous retirement benefits, since those benefits are received independently of his present be-
behavior. Also, the depressive feelings of a beautiful woman who believes that she gets reinforcement from the environment because of what she is and not because of what she does.

Melges and Bowlby (1968) stress the importance of hopelessness in depression. Hope and hopelessness refers to the person's estimate of his ability to achieve certain goals. This estimate has been found to vary as a function of prior successes. A depressive feels hopeless about the future when he believes his skills will no longer be effective in reaching his goals. He feels he has failed because of his own incompetence, and he estimates that his previous efforts have failed. Consequently, he becomes dependent and lacks motivation. Even though he believes he is incapable of attaining his goals, they remain important and he is preoccupied with them (Seligman, 1974). Gaylin maintains that the crisis in self-esteem which Bibring emphasizes is really a crisis in self-confidence, in any case, what they are saying is that the depressed individual has lost his belief in his ability to cope with stress (cited in Freidman, 1973).

**Life Events Theory**

This theory states that there is a relationship between external events and the occurrence of depression. As mentioned early in this paper, there are some authors who
believe that even in the so called "endogenous" depression certain external precipitating events can be identified. There have been studies comparing the occurrence of these events in the depressed population as compared to its incidence in control groups. Other studies have focused on the types of events which are more likely to precipitate clinical depression.

Paykel and Klerman did a study which incorporates both of these approaches (cited in Paykel, Myers, Dienelt, Klerman, Lidenthal & Pepper, 1969, p. 755). They compared the life events of 185 patients, whose primary diagnosis was depression, with the life events of a control group of 185 people, representing a cross section of the community's population. Each control individual was matched with a depressed patient on variables such as sex, age, marital status, race and social class. The time period for which events were recorded for the depressed patients was the six month period prior to the onset of the depressive symptoms. This time period was chosen in order to tap those events reflecting causes rather than consequences of depression. Data from the controls were limited to the six month period prior to the interview.

It was found that the depressed patients reported al-
most three times as many events as the controls. The overall increased frequency of events in the depressed group was paralleled by increased frequency of most of the individual categories of events. The categories of events in which a significant increase was found in depressives were:

1. increase in arguments with spouse; 2. marital separation; 3. start of new type of work; 4. death of immediate family member; 5. serious illness in family member; 6. departure of family member from home; 7. serious personal physical illness; 8. and change in work conditions.

Other events were also reported more frequently in the depressives, but they occurred too frequently in either population for differences to achieve statistical significance (cited in Paykel, et al., 1969, p. 755).

When these events were categorized as either exits or entrances from the social field it was found that depressives experience more events which are related to social exits such as: death of a close family member, separation, divorce, and absence of family member, as opposed to those events which represent social entrance such as engagement, marriage, etc. The concept of an exit from the social field overlaps with the psychiatric concept of "loss" which was mentioned in the psychodynamic model. When these events were categorized as either desirable or undesirable
it was found that depressives experienced more undesirable events such as being fired, business failure, etc. as opposed to desirable events such as, marriage, promotion, etc. When the events were categorized according to area of activity it was found that depressives experienced a significant increase in events pertaining to the areas of employment, marital situation, and health. There was also an increase in the areas of legal and family related events, however, it was not high enough to reach statistical significance.

It should be noted that the data were obtained through self-reports which is not a very reliable source. Also there were some differences in interviewing techniques and setting for the two groups. The control group was interviewed at their homes in a more casual manner; while the depressed group was interviewed in a treatment facility in a more probing manner. Another question raised is whether the increase in reported events for the depressed group was due to the negative cognitive set which characterized them. The authors explained that they tried to control this bias by interviewing the patients after they had obtained "substantial improvement", and they recorded the event and not the patient's perception of its stressfulness. Also, the events which seemed to be influenced by reporting differences were
not used in the data analysis.

Other authors who have done controlled studies of life stress events in depressed patients are: Forrest, Hudgens et al., Morrison et al. (cited in Brown, Harris and Peto, 1973). Their findings and those of Paykel et al., support the importance of life stress in the genesis of clinical depression. More specifically, undesirable events and those involving loss or exits from the social field seem to be particularly relevant in the etiology of depression. Other authors have found life events to be associated with the development of a variety of physical illnesses, which suggests that negative events may not be found exclusively in the etiology of depression.

In any event, the question remains of why such events produce clinical depression in some individuals and not in others. Paykel (1969) suggests that real or perceived losses in the supportive environment of the individual, or within the individual himself, will result in depression depending upon at least two factors: the meaning which the loss has for the person, and the magnitude of the readjustment in life patterns necessitated by the loss. Seligman suggests that an individual will acquire a predisposition to depression either when the amount of life stress situations
have been too numerous or when he has had only successful experiences, and thus, has not mastered the skills to deal with failure. Consequently, the way in which a person becomes "inoculated to depression" is by experiencing and successfully controlling or overcoming stressful situations in small dosages. In summary, according to the life events theory, an individual, who is predisposed to depression, functions normally except when a situation arises in which he is unable to cope with a large concentration of environmental stresses.

**Interpersonal Disturbance Theory**

Disturbances in the relations with significant others is so commonly found in depressives that it deserves to be mentioned separately from other potentially stressful events. According to McLean (1976) depression occurs when an individual has lost the ability to effectively control his interpersonal environment. McLean, Ogston and Graner (1973) did a controlled study and found out that depressive married couples developed coercive communication patterns in order to influence one another's behavior. These patterns resulted in: avoidance of communication, anarchic approach to domestic problem solving and development of depressive symptoms by the weaker partner.
An increase in arguments with the spouse was one of the events found by Paykel (1969) which occurs more frequently in the depressed population. These arguments could be both a cause and a consequence of depression, i.e. the depression of family member can precipitate the arguing, or the arguing can precipitate the depression in a family member. However, these disturbed patterns of communication could also be related to a personal disturbance, independent of depression. Stuart (1967) also defines depression as a "maladaptive attempt to manipulate the interpersonal environment which is characterized by communication disturbances, the result of which is a feeling of powerlessness" (p. 27).

Thus, the interpersonal disturbance theory does not offer a different explanation of depression per se, but instead emphasizes the role of disturbed patterns of communication in causing depression by a reduction in positive reinforcement and indirectly, where punishment, avoidance or escape may suppress behaviors that would have been followed by positive reinforcement. This approach is related to Lewinsohn's in that it emphasizes social skill deficits, which prevents the person from acting more effectively upon his interpersonal environment. It is also related to Seligman's learned helplessness theory in that the person
feels unable to master bad interpersonal situations.

**Variable Cause Theory**

According to this theory there is no singular cause of clinical depression. As Ferster (1973) points out "we can not expect that there will be one cause of depression or a single underlying psychological process, because behavior is a product of so many psychological processes" (p. 861). Thus, depression is considered a generic state with a multiplicity of determinants. Wolpe (1971) postulates three independent conditions as potential antecedents to depression: 1. failure to control interpersonal situations; 2. exaggeration and prolongation of normal reaction to loss, and 3. inability to deal with extreme fear and anxiety. Each failure is due to the inhibitory effects of neurotic anxiety. In other words, in the case of failure to control interpersonal situations, if a person dominates another because of his position, prestige, wealth or physical strength; the dominated person may feel resentful, frustrated or resigned. Depression occurs only when the domination derives not from real power but as a result of the submissiveness of the dominated. When the dominated experiences anxiety about the thought of asserting himself or toward the imagined consequences of his assertiveness, such as hurting the other
person's feelings, then a response to master the situation is not available to him and thus, he becomes depressed. Furthermore, if this powerlessness extends toward most of his relationships, he is more likely to become clinically depressed.

If one experiences a loss which is irrevocable this is followed by a feeling of realistic helplessness. While, some people are able to overcome this feeling by finding substitutions for this loss, in a case of exaggeration or prolonged reaction to loss, the depressed individual is unable to emit the behaviors which will provide a substitution for the loss. In addition, if the individual has received repeated losses in the past, a conditioned helplessness response would be triggered by each subsequent loss. Finally, in the case of inability to deal with anxiety, if all the efforts to overcome anxiety fail, the individual becomes passive. This passivity is characteristic of conditioned learned-helplessness. Thus, depression can be seen as a defense against the experiencing of anxiety, or as a maladaptive way to cope with it.

Lazarus (1968) also proposes three main determinants of depression: 1. as a consequence of anxiety that is unusually intense or prolonged; 2. as a consequence of a
general loss of reinforcer effectiveness and 3. as a consequence of inadequate or insufficient reinforcers (such as, the withdrawal, loss, expected loss or anticipation of a non-reinforcing state of affairs). Also, McLean (1976) views a depressive symptomatology as the result of the following process: repeated goal frustration in a variety of significant areas leading to a feeling of little control over the environment which leads to the anticipation of chronic failure and thus to the depressive symptomatology. This concept of the etiology of depression is very similar to Seligman's learned helplessness model. In addition to this, he outlines three processes which facilitate the development of depressive symptomatology: 1. increased rate of negative thoughts; 2. relative avoidance of social interactions and optional task demands (thereby, leaving more time for rumination), and 3. social reinforcement for depressive symptomatology in the form of sympathy and simultaneous release from performance responsibilities. Since both the factors presented by Lazarus and those presented by McLean have been discussed previously they will not be explained at this time but will be dealt with again in the section dealing with treatment modalities.
Central to behavior theory is the identification of maladaptive behaviors, and their connection with their antecedents and consequences. Lazarus (1968) formulated the following pragmatic rule "when the depressive verbalizations, such as nihilistic statements and complaints, do not center around stressful or other provoking emotional experiences, endogenous (i.e. physiological) factors must receive diagnostic priority (p. 85). In order to formulate a treatment program the target behaviors have to be defined explicitly. It is insufficient to select as the goal of treatment the alteration of "depression"; first, it is necessary to identify the specific depressive behaviors in each individual which will lead to an operational definition of depression in each case. The main difference between behavioral assessment and traditional assessment strategies is that the behavioral assessment leads to an operational definition of depression, while the traditional assessment leads to a "label" or diagnostic category of depression. Since not all individuals become depressed in the same way or for the same reasons, a behavioral assessment is
more relevant to the specific goals and treatment modalities for each individual; whereas, in the traditional differential diagnosis the treatment is more related to the "label" than to the individual.

Pehm (1976) states several problems which are encountered in the behavioral assessment of depression. While mood varies as a function of various environmental events and contingencies, specific eliciting stimuli sometimes are not easily identified. Thus, depression may not be measured in terms of the number of situations in which it occurs. Also, it is difficult to assess the responsibility of depression eliciting stimuli. "Depression is thought of as a pervasive 'mood', which affects many kinds of responses in all situations" (Pehm, 1976, p. 234). However, if we classify depressive symptoms according to their mode of expression into verbal-cognitive, overt-motor and physiological categories, it is possible to estimate their frequency and intensity through certain assessment techniques and instruments.

The strategies which have been used more often in the traditional assessment of depression are: 1. the clinical interviews; 2. the depression scale (D) of the Minnesota Multiphasic Personality Inventory (M.M.P.I.), 3. projec-
tive tests such as the Rorschach Ink Blot Test, the Murray Thematic Aperception Test (T.A.T.), and the Human Figure Drawing Test, and 4. open ended questionaires such as Rotter's Incomplete Sentence Blank (R-I.S.B.).

1. In the clinical interview information is obtained about the subject, in the following areas: 1. reasons for coming to therapy; 2. immediate family (degree of closeness and concerns); 3. interest, hobbies, occupation and goals (degree of satisfaction and expected success); 4. concentration and motivation; 5. ability to make decisions and to act upon them; 6. daily activities; 7. habitual emotional responses; 8. worries and responsibilities; 9. suicidal ideation; 10. perceived socialbility; 11. religious background; 12. physical condition; 13. unusual events (within the past year); 14. self description and how others would describe him; 15. aspects of self which he would like to change.

2. The D scale of the M.M.P.I. is a self-report measure for depression, which has been widely used for assessment and clinical research purposes. The disadvantage of this scale is that it is highly correlated with other "neurotic" scales of the M.M.P.I. (i.e., hypocondriasis and psychas-tania) thus, patients in whom depression is not the major
presenting symptom also tend to attain high scores on the D scale.

3. In the projective techniques vague, ambiguous, and unstructured objects or situations are used in order to elicit the individual's characteristic modes of perceiving his world or of behaving in it.

In the Rorschach, for example, an increase in the time interval between the presentation of the stimulus and the response given by the subject (i.e. latency period) is taken as a characteristic of the general "slowness" of the depressed patient. Also statements of inadequacy in regard to their ability to respond or to the accuracy of their answers is frequently found in depressives. In the T.A.T. pessimistic outcomes and themes are taken as a sign of depression. In the human figure drawings, a reduction in the size of the pictures is interpreted as correlating with the low self-esteem of the depressed patient.

4. The R-I.S.B. is a semi-structured test in which the patient is required to finish sentences with a complete thought; forty "stems" are completed by the subject. These completions are then scored by comparing them to typical responses, and by analyzing their ideational content.

In clinical behavior assessment some traditional
techniques like the interview, and the M.M.P.I.-D scale are used in the assessment of depression.

**Interview.** The objectives of the interview from a behavioral point of view are: 1. to identify the target behaviors, 2. to identify antecedent events (internal and external), 3. to identify those events which follow the target behavior (internal and external). 4. to estimate the timing and frequency of the target behaviors, 5. to identify what is currently being done about the problem and 6. to estimate the availability of reinforcement for non-depressive behaviors.

**Self-Report Depression Scales.** The D scale of the M.M.P.I. is one self-report depression scale which is widely used. The items on the M.M.P.I.'s depression scale were divided by Harris and Lingoes (in Pehm, 1976). They called these subscales: 1. subjective depression; 2. psycho-motor retardation; 3. complaints about physical malfunctioning; 4. mental dullness and 5. brooding. The first three subscales are consistent with the most accepted conception of depression, while, the last two are less typical. From the point of view of behavioral assessment, however, this scale has little value beyond its common use. The analysis of individual items in order to identify problematic behaviors
is generally not very revealing. Certain items such as "I sometimes tease animals; False", is not useful for identifying target behaviors. Nevertheless, this scale has a primary value in behavioral research, because it allows comparison between studies on a general dimension of self-reported severity of depression (Pehm, 1976).

Other self-report depression scales used in behavioral assessment are: Beck's Depression Inventory (B.D.I.), Lubin's Depressive Adjective Check List (D.A.C.L.), and Zung's Self-Rating Depression Scale (S.D.S.). These scales are easier to administer than the M.M.P.I. (D) scale. The B.D.I. consists of 21 items, each one of them has 4 or 5 alternative statements. The patient selects the one statement in each item which better describes the way he feels. The analysis of this item gives information regarding the presence of a problematic behavior and its intensity. i.e.

A (Sadness)

0 I do not feel sad.
1 I feel blue or sad.
2a I am blue or sad most of the time and can't snap out of it.
2b I am so sad or unhappy that it is quite painful.
3 I am so sad or unhappy that I can't stand it. (cited in Beck, 1967, p. 333).

The S.D.S. consists of 20 statements which are rated on a four point frequency of occurrence scale going from "none
or little of the time" to "most or all of the time". Both measurements require very little time to administer and each scale includes items involving the self-report of overt-motor, physiological, and cognitive distortion behavior. Thus, they provide information in regard to response classes that could become targets for modification. They are also excellent pre and post-treatment measures.

The D.A.C.L. consists of seven parallel lists of adjectives designed to provide a measurement of transient depression, i.e. the individual's mood at a particular moment in time. The person is asked to "check the words which describe how you feel now - today". The D.A.C.L. ratings are then used to assess the relationship between shifts in reinforcement contingencies, e.g., specific environmental events, and the patient's dysphoria level.

However, this scale has not proven to be useful as a pre and post-measure of change, but, it assesses the relationship between depressed affect and other aspects of behavior (see Lewinsohn & Graf, 1973, and Lewinsohn & Libet, 1972 for an explanation of this relationship).

Interviewer Rating Scales. In addition to the self-rating scales, a number of instruments have been developed which also rely on the information given by the patient, yet
the actual rating is done by the interviewer. The most frequently used interviewer rating scales are: the Hamilton Rating Scale and the Grinker Feelings and Concerns Check List.

The Hamilton Rating Scale consists of 17 variables, each of which is rated on a 3-or-5 point scale. The content includes cognitive, behavioral, and physiological symptoms which are usually associated with depression. In addition, it also contains some less common symptoms such as: derealization and depersonalization; paranoid symptoms and obsessive symptoms. This scale is designed for use with patients who have already been diagnosed as depressed. Nevertheless, this scale is not very good for identifying problematic behavior areas since it mixes cognitive-verbal and overt behaviors within the same dimension.

The Feelings and Concern Check List is made up of 47 items. Each item is rated on a 4-point scale from 0 (not present) to 3 (markedly present). The content of the items is entirely cognitive. It has been divided into five factors labeled as: "I) dismal, hopeless, bad feelings; II) projection to external events; III) guilty feelings; IV) anxiety and V) clinging appeals for love" (p. 243).

Since it is important in Behavioral Therapy to avoid
relying entirely on self-report measures of depression, the interviewer rating scales offer one form of reliability check on self-report. However, the basic data being rated is essentially the same (i.e., the patient's verbal self-report). The use of a skilled interviewer may reduce some of the distortions and biases of the patient, but it also introduces the distortion and biases of the interviewer. Finally, in assessing verbal-cognitive symptoms, establishing validity through another rater is inappropriate. If overt-motor or physiological symptoms are assessed, then from the behavioral point of view the best way to validate self-reports is to observe and measure the overt behaviors directly. The value of the interviewer rating scale lies in providing some kind of validation when direct observation of the behavior is impractical.

Assessment of Overt-Motor Behaviors

For obvious reasons direct observations of the behavior of depressed patients is of great interest and relevance to behavioral approaches to depression. Several behavior coding systems have been developed for the behavioral observation of depressed individuals by Lewinsohn, Liberman and Williams (cited in McLean, 1976, p.99). However, since depressed individuals manifest a wide range of problematic
behaviors, singular coding systems are not appropriate for recording all the problematic behaviors in all individuals.

Assessment of Verbal Behavior. Robinson and Lewinsohn identified a slowed rate of speech as a target behavior in a chronically depressed patient. The number of words per 30 second interval in therapy interviews were tabulated with a counter by an observer behind a one-way mirror. The rate of speech appeared to be a fairly stable response characteristic which was brought under reinforcement control (Pehm, 1976, p. 245). Lewinsohn and his colleagues have developed a method for coding the verbal interaction behavior of individuals in group and home settings. This method has been used to identify problem areas which then become targets for behavioral intervention. Some problem areas which have been identified through this method are: 1. low verbal activity level in the family; 2. few verbal initiations by the client; 3. low rates of mutual reinforcement and 4. negative reactions from the spouse. The data obtained through assessment can be used as objective feed-back to clients. Although the utility of these methods can not be denied, their application in everyday clinical use is questioned due to the fact that it requires multiple and well trained observers in home or group settings.
McLean et al. (1973) described a simplified method based on Lewinsohn's coding system, which requires the tape recording of half-hour sessions of problem discussion with the spouse. These recordings were separated into 30-second intervals and coded for positive and negative initiations and reactions. Ten minute segments of therapist-absent interaction among groups of depressed subjects in a therapy study were videotaped. The number of statements for each 10-minute interval were counted as a simple assessment of verbal activity level. The use of audio-visual equipment to record behavior waves the need for observers to be present at the time the behavior is occurring, and increases the accuracy of the observation. These tapes serve as a means of presenting objective feedback regarding the person's behavior. However, when these instruments are used, there may be a disturbance in the person's behavior due to the obtrusive nature of the equipment.

**Overt-Motor Depressive Behavior.** Williams, Barlow and Agras (1972) developed a behavioral rating scale, which includes simple observable behaviors such as: talking, smiling, motor activity (10 subclasses further define this behavior), and time out of room. This scale has been used with psychiatric in-patients. The presence or absence of
these behaviors is rated by aides using a time sampling procedure (e.g. one per hour).

Williams et al. (1972) describe an apparatus which permits 24-hour telemetric recording of activity in in-patient settings. The transmitter is worn on a leather wrist band and has a range of 100 feet. Receivers transform data into pulses which are read out digitally as number of counts per minute. Nevertheless, the assessment of depression by this instrument is not very accurate due to the fact that both retardation and agitation can occur in depression. Furthermore, agitation is generally considered to be more characteristic of anxiety.

**Activity Schedules.** These schedules have been used in the assessment of depression, and involves a self-reporting of overt-events or activities. Since depression involves decreased activity, these techniques may directly assess important aspects of depression. The Pleasant Events Schedule (P.E.S.) developed by McPhillamty and Lewinsohn (cited in Pehm, 1976), which is based on Lewinsohn's theory which states that depression is due to a lack or loss of response-contingent positive reinforcement. The P.E.S. intends to assess the amount of external positive reinforcement that the individual receives. It consists of
320 events and is used as: 1. a retrospective report of the events of the last 30 days and 2. as the basis for daily logs of ongoing behavior. As a retrospective report, subjects are asked to record the frequency with which each item occurred on a 3-point scale: 1-not happened; 2-a few times (1 - 6), and 3-often (7 or more times). Besides the frequency subjects are supposed to indicate how pleasant the event was or could be; again on a three point scale; (1-not pleasant, 2-somewhat pleasant or 3-very pleasant). These ratings are used to assess activity level, reinforcement potential and obtained reinforcement. The items which are highly correlated with mood are selected as target behaviors. Also, the patient's daily logs are useful in correcting cognitive distortions of their own behavior. Finally, behaviors can be selected to be used as contingent self-reinforcement. However, the utility of P.E.S. in assessing overt depressive behavior is questionable, when used as a retrospective instrument, due to the fact that recollected self-report may be distorted. On the other hand, when used as a daily log measure, although it would be more accurate, the self-monitoring could influence the occurrence of a variety of behaviors which are being observed. From this point of view it is more valuable as a
part of a therapeutic intervention.

The assessment of overt-motor depressive behaviors has been done mostly with in-patients, its use with out patients is warranted. For data on the reliability and validity of all the instruments and scales discussed in this chapter see Pehm (1976, p. 240-252).

In the traditional assessment approach patients are assigned a clinical diagnostic category which indicates the commonalities that he shares with other individuals so diagnosed. In contrast, the behavioral assessment approach attempts to evaluate the uniqueness in a person's behavior and the situations in which it occurs. Furthermore, it uses descriptive rather than abstract terminology. It describes both desirable and undesirable behaviors. It places more emphasis in the present condition than in historic happenings which can not be changed. Therefore, behavioral methods of assessment are just as, if not more, useful, valid and reliable. Other advantages of this method of assessment are that it is more value free, and can be executed by non-professionals.
Behavioral Treatment of Depression

The information gathered in the assessment process must be put together and ordered, so that the therapist may identify the dependent variables (client's problem behavior) and independent variables (causing and maintaining factors). Once this assessment is completed it is presented to the client, followed by an explanation of the treatment objectives and strategies. Given the assessment of the client's situation and the formulation of the therapeutic objectives, the therapist must design an appropriate intervention program.

In the third section of this paper the formulations regarding the behavioral approach to the etiology and maintenance of depression have been presented. This section will deal with the therapeutic formulations derived from these different hypotheses, and it will be organized according to the proposed etiology. Some case studies demonstrating the effectiveness of these therapeutic techniques in clinical use will be cited.

In the treatment program the identified problem behaviors (dependent variable) become the target for modifi-
cation. The treatment procedures employed in the effort to change that dependent variable constitutes the independent variables. Sometimes several independent variables are combined in one treatment package, although this makes it more difficult to identify which treatment strategy or strategies were the critical ones in bringing about change. The independent variables or treatment strategies are derived from clinically relevant literature.

It is from these findings and from empirical evaluations of their effectiveness in clinical situations that the therapist decides what procedures or treatment strategies will be employed in a given clinical situation (Craighead, Kazdin & Mahoney, 1976, p. 163).

Loss of Reinforcible Behavior Hypothesis

Ferster utilized a functional analysis of behavior on target areas where rewarding involvement on the part of the depressed person should be developed, and indicates the use of response contingent reinforcement as a means of fostering this development. This rewarding involvement is hypothesized to be incompatible with depression. Ferster and Perrott states that

The most general way to increase the perceptual behavioral repertoire is to begin with simple activities, whose reinforcement is reliable but not so invariant that there is not some circumstances where the performance on one
occasion and its non-reinforcement on another
teach the person to observe the appropriate
features. The most important element, however,
is an increase in the person's tendency to act
positively on the environment rather than to
act passively and emotionally, and to use re-
inforcement behaviors other than the primitive
or atavistic activities eventually decreases
their frequency by prepotency and non-rein-
forcement
(cited in Ferster, 1974, p. 98).

One of the reinforcers that the therapist has available
in the therapeutic interaction is the attention that he
gives to the client by the differential reinforcement of the
patient's verbal activity (i.e., ignoring depressive verbal-
izations while attending to reports about his activity). Al-
though, the ultimate goal of therapy is to increase the
patient activity rather than his talk about his activity
this class of verbal behavior serves an important function
because: 1. it increases the patient's verbal activity
which in itself could be useful; 2. it becomes a means for
the patient to observe his own activity, since his speech
is a repertoire of performances which is differentially re-
inforced (by the therapist) according to its relationship
with patient's activity; 3. the patient's verbalizations
are a means of observing his own activities by noticing the
descrepancies between what he is doing and what he can say
about it objectively.
Several therapists and researchers have used contingency management to promote the completion of adaptive behavior and the extinction of depressive behavior. Burgess (1969) used this approach in the treatment of six individual cases. Only once, during the first interview were the clients allowed to verbalize their sad state of affairs. Therapist attention and approval was used as a reinforcer during the interviews, contingent upon the patient's verbalizations of the tasks he had accomplished or in planning the next behaviors to be undertaken. Furthermore, if the patient's history indicated the loss of a reinforcer which was still available, efforts to reinstate them were made. If the reinforcement losses were of a general nature the clients were required to emit a few performing behaviors which required minimal effort for successful completion.

The emphasis was placed on the successful completion, rather than in the nature or value of the task. Gradually task requirements were augmented so that the behaviors increased in frequency, duration and quality, and successively approximated the former behaviors from the client's repertoire. This method exemplifies the process of shaping: the reinforcement of successive approximations to a final response which resembles the patients premorbid behavior.
Also, significant others in the client's environment were instructed to provide reinforcement according to prescribed contingencies. These techniques changed according to the individual client's reinforcement histories, contingencies and environmental components.

Burgess reported that four of the six patients remained symptom free six to nine months after treatment, while one patient had suffered a relapse at a two-month follow up and one patient was still in treatment. She also reported at least some improvements in all cases after three weeks of treatment. However, Burgess outcome measures consisted mainly of patient's self-reports of how they felt and the therapist's subjective view of them. In addition, as Burgess declared "case reports...are not adequate to establish the efficacy of any treatment method" (p. 199). These findings could have greater validity if more objective methods of assessment would have been introduced, i.e. pre-post test measurements of level of activity and depression, or an experimental design to demonstrate the relationship between the contingencies and behavior change.

Liberman (1970) applied reinforcement contingencies in the context of family therapy in order to increase the frequency of adaptive behaviors. That is, the therapist
and family members changed the focus of attention from depressed behaviors to more coping and constructive behaviors. He cites three cases:

1. The case of a woman whose major interest in life was painting; she developed depression characterized by apathy, self-derogation and anxiety while she was incapacitated with a severe respiratory infection. She was unable to paint during her illness and lost interest and confidence in her art work, thus, she became depressed. After providing a supportive relationship for a month, the therapist scheduled a home visit to look at her paintings and to talk with her while she put paint on the canvas. This motivated her to return to the easel and within a few weeks she experienced a gradual lessening of her depression.

2. The case of a 56 year old man who droned on interminably about his somatic complaints and his worthlessness and failure as a person: The therapist ignored these complaints (after two sessions) and instead persistently inquired about his coping efforts. A ten-session contract was agreed upon, at the end of which his depression remitted and his coping efforts increased. The results of these two studies are tentative due to the fact that they were uncontrolled case histories.
3. The case of a 37 year old housewife who exhibited "depressive-like" behaviors such as crying, complaining about somatic symptoms, pacing and withdrawal. The therapist noted that these behaviors were maintained at a high rate, because members of the family responded to them with sympathy, concern and helpfulness. So, he instructed the family members to pay instant and frequent attention to her coping behavior and to gradually ignore her depressed behavior. Within a week her depressed behavior decreased sharply and her "healthy" behavior increased. A reversal experimental design (A-B-A-B) was used, and it indicated a causal link between her behavior and the responses generated in the family. One year after termination she was continuing to function well without depressive symptoms (cited in Liberman & Raskin, 1971, p. 521).

Another way to increase behavior is by the use of Premack's principle. That is, if the emission of a high probability behavior is made contingent upon the emission of a desired low probability behavior, the frequency of the low probability behavior will increase. Lewinsohn, Weinstein and Shaw (1969) describe the use of this technique in increasing the frequency of rarely exhibited behaviors (e.g. expressions of self-confidence, assertiveness, optimism,
and performance of constructive acts) by allowing the patient to engage in high frequency behaviors (e.g. self-depreciatory statements, complaining of symptoms), only after he has shown some of the less frequent but more adaptive behaviors.

They cite the case of a 22 year old male who had spent several months roaming aimlessly around the country following the failure of his marriage. When he came for the intake interview he was suicidal and spent most of the hour in an animated account of his marital and other failures, and also about his bad financial situation. Working together, therapist and client decided upon a series of concrete steps which would enable the patient to come to some career and job decisions. Following this, the therapist began each interview by inquiring as to the amount of progress the patient had been making in regard to steps agreed upon. If he had taken some definite action, the therapist then would listen about the "depressive" things the patient wished to talk about. On the other hand, if the patient had accomplished little since the last hour the therapist would be polite but brief and end the session within 10 or 15 minutes, suggesting that the client come back three or four days later. Within a few weeks, this client had
made and acted upon, many decisions such as, finding a job, arranging for a loan, etc. He reported that he felt much better and that he had gained many "insights" into himself. The results obtained have limited validity due to the fact that it is an uncontrolled case study, and the outcome evaluation is based on self-report.

Another behavioral technique that has been used to reinforce behaviors which are incompatible with depression is the token economy program. Hersen, Eisler, Smith and Agras used token reinforcement procedures in an experimental study with psychiatric patients. It was noted that this procedure increased the behavioral output by patients in a ward. Also, depressed patients reported that when they were involved in token economy activities they tended to brood less and did feel an improvement in their condition (cited in Hersen & Eisler, 1973).

Hersen and Eisler (1973) did another study using an A-B-A experimental design. They tested the hypothesis that work behavior on a token economy program is incompatible with the emission of depressive behaviors. Three neurotically depressed subjects were awarded points on index cards contingent upon completion of target behaviors under the classification of work, occupational therapy, responsibili-
ty and personal hygiene. During phases A of the experiment points were awarded contingently upon the completion of target behaviors. However, these points were not backed up by privileges. In other words, privileges were not contingent upon desired behavior. In phase B privileges were made contingent upon the points that the patients had earned by performing the target behaviors.

During both A phases, the number of points earned and the number of adaptive behaviors emitted were low. However, with the introduction of the token economy (phase B), there was a dramatic increase in points earned, a concomitant increase in target behaviors and a decrease in observable depressive behaviors. Thus, participation in a token economy program which increases work behavior was associated with marked diminution of observable depression.

A clinical implication of these findings is that it is not enough to get depressed patients going through the motions of working or being active, but that it is crucial to make sure that they receive contingent reinforcement (e.g., recognition or money for their efforts). As Grinker et al. (1961) point out overt-motor behavior per se was not a good indicator of how the depressed patients in their sample were actually feeling.
Loss of Reinforcers Hypothesis

When the depression is caused by the loss of reinforcers such as money, work, friendship, etc., Lazarus (1968) proposes three methods of treatment that could be effective in increasing reinforcement: 1. Time projection, in which the patient is instructed to imagine himself advancing in time and engaging in activities that have been or might be enjoyable; "Once the patient can imagine himself sufficiently freed from his oppressive inertia to engage in some enjoyable activity, a lifting of depressive affect is often apparent" (Lazarus, 1968, p. 87). 2. The purposeful encouragement of affective expression (e.g. expression of anger), is not only incompatible with depression, but its expression has strong effects on the social environment. Other affective responses which are incompatible with depression are amusement, affection, sexual excitement, etc. Thus, these responses are encouraged in order to break the depressive circle; 3. Behavioral deprivation and retraining (derived from Morita therapy, by Kora), involves a period of bed rest without access to external stimuli. The intent is to make the patient more susceptible to incoming stimuli, that is, to sensitize the patient to reinforcement. After that, the patient progressed from light, to heavy, to
complicated work. Lazarus does not cite any research using this approach but he indicates that he has obtained some "encouraging preliminary results". The time projection technique is based on the fact that the passage of time has a healing effect in that it permits new or competing responses to emerge. If the patient is able to contemplate future positive reinforcements, depressive responses diminish or disappear. The therapeutic utility and application of this observation is illustrated by the following case: Miss C.H. became acutely depressed and suicidal when her boyfriend announced that he intended to marry somebody else. The intake interview revealed that prior to this love relationship, she had enjoyed painting, sculpting and practicing the guitar. She also went horse-back riding and was interested in attending concerts. A time projection sequence was designed including these activities. Under hypnosis she was instructed to imagine herself engaging in these activities and then to reflect back on the incident "now more than 6 months old". One week later, she reported having enjoyed many productive hours and there was improvement in appetite and sleeping patterns. Lazarus states that many patients have responded well to this technique when neither relaxation nor hypnosis was employed. The time projection
sequence has been used with 11 patients. Six cases responded excellently, two improved moderately, and three were unimproved. These results refer to one-session trials. Caution should be observed in deriving any conclusions from these results due to the uncontrolled, case history nature of this "supportive" material.

Consistent with Lazarus' theory that the expression of anger is incompatible with depression is the "attitude therapy program", explained by Taulbee and Wright (1971). Their anti-depression program consists in assigning nongratifying, monotonous, often meaningless tasks such as telling the patient to sand a block of wood, then he is reprimanded for sanding against the grain. After he switches to sanding with the grain; he is reprimanded for doing it that way, the abuse continues until the patient expresses anger. He is then promptly lead out of the room with apologies and is assigned to a less demanding program with opportunities for personal satisfaction. His outburst, and the effects of this behavior is expected to break up his depression. This program was compared with a more traditional treatment in which meaningful "ego building" tasks in recreational and occupational therapy were used. Six patients who obtained a significantly high score in the D scale of the M.M.P.I.
were assigned randomly to each of the two groups. Post-treatment evaluation using the M.M.P.I. indicated that depressed patients improved with both forms of therapy but the antidepression groups continued to improve, while the traditional group tended to regress. After the antidepression program, patients appeared less depressed, less dependent upon physical symptoms and less ruminative (cited in Seitz, 1971). These findings were corroborated in two subsequent studies which included more subjects, control groups and additional tests to establish criteria for improvement. Even though, this method appears to be effective in the treatment of hospitalized patients these findings can not be generalized to other settings, due to the limited sample on which it was used.

In summary, the techniques used to increase the amount of positive reinforcement that the person receives appear to be useful for increasing the patient's involvement in rewarding activities and consequently in ameliorating the depression.

**Reduced Frequency of Social Reinforcement Hypothesis**

A majority of theorists have conceived depression as a function of a reduced frequency of social reinforcement (Hersen & Eisler, 1973; Lewinsohn, Weinstein & Alper, 1970;
Lewinsohn, Weinstein & Shaw, 1969; Liberman & Raskin, 1971; McLean, Ogston & Grauer, 1973; Shipley & Fazio, 1973). As a consequence, therapy consists of social skill training and in many cases it involves the family in the therapeutic process, since the family is a major source of social reinforcement.

Shipley and Fazio (1973) cited a pilot study using college students seeking counseling, they were selected on the basis of Self-Rating Depression Scale Scores (.45 or more) and M.M.P.I. D scale (T score equal to or above 70) and treated in two controlled experiments using a functional problem solving approach.

The therapist recommends a mutually agreed upon set of appropriate actions to be attempted by the client before the next session. When the client returns, the results of the attempted assignment are reconsidered and new set of recommendations is made... By attempting different responses and using success versus failure as feedback about actions and/or discriminations, the client learns more skillfully to manipulate his environment, control himself and communicate his intentions (p. 373).

In addition, patients were instructed to confine their depressive verbalizations to occasions in which they would not be either reinforced or punished. Also, they were instructed to terminate isolated periods of depression by engaging in some pleasurable activity or to experience
anger about their plight.

A multiple base-line design across 2 groups was used to test the treatment effectiveness. The M.M.P.I.-D scale as an assessment measure revealed a significant improvement associated with the treatment group compared to the control group. There was no significant differences in within-group scores for either the treatment or control group on pretreatment M.M.P.I. D scores. Retesting, after treatment for the first group, showed no significant change in the control group. Later, treatment for the control group replicated the treatment effect of the treatment group. The authors suggest that further research, done with other populations where additional dependent measures are used and intercorrelated as well as validated with other preformance measures, is necessary in order to corroborate these findings.

Lewinsohn, et al. (1969) states that "the main goals of treatment are: to restore an adequate schedule of positive reinforcement for the individual by training him to emit behaviors which are likely to be positively reinforced by others and to engage in activities which are intrinsically rewarding for him" (p. 232). Several treatment strategies which have been found useful in accomplishing these goals
are:

1. Home observations have as a primary objective to identify the behavior patterns which seem to be causally related to the depression. These findings are presented to the client and family members, then behavioral goals are identified and agreed upon. One additional benefit of this technique is that it involves a significant part of the client's environment in the treatment process.

2. Mood ratings consist of having the patient rate his mood at the end of each day. They provide feedback about any improvement due to the treatment, which motivates the client and family to continue with the program.

3. A three-month time limit for treatment appears to motivate behavior change; as the end of the 3-month period approaches both client and therapist appear to increase their efforts (possibly, to avoid the aversive consequences of terminating treatment without improvement).

4. A diary or written account of the person's activities, can be related to the mood ratings and then the person is reinforced for engaging in activities which seem to correlate the most with mood improvement.

5. The administration of interest tests identifies areas of interest so that the patient is encouraged to
engage in these activities.

Lewinsohn and Atwood (1969) used the above mentioned therapeutic strategies in the case of Mrs. G. Changes in her condition were evaluated by use of the D.A.C.L. and M.M. P.I. There was a dramatic change between the pre and post therapy scores in both measures. However, as it has been pointed out, case studies have limited scientific value. Although, there is a pre-post test comparison there is a lack of control of so many other variables that could have intervened in the process. Specifically, in this case the authors cite other non-behavioral techniques which were introduced in the treatment (e.g., discussion of dreams) which makes this study of very little value other than being an illustrative case of the application of these techniques.

**Group Treatment.** The preferred setting for increasing social skills is the group setting, especially when the person lives alone. The group creates a social environment, through which behavioral difficulties are identified and new and more effective patterns of interpersonal behavior are acquired. According to Lewinsohn et al. (1970) the main therapeutic strategy in group therapy is,

to provide each patient with information about his own behavior and its consequences, to define behavior goals with him, and to use a peer
group and the therapist to reinforce behaviors consistent with and to extinguish behaviors inconsistent with these goals, in the group interaction (p. 526).

They report the following study, in which the M.M.P.I., interview ratings and interactional data indicated changes for most group members. There was an increase in social skills along with decrease in depressive behaviors. Nine college students volunteered for the experiment. The group met for 18 sessions (15 one-hour and 3 two-hour). An analysis of the interactional data was done, before and after treatment and they noted an increase in positive interpersonal reactions. Also, pre and post test measurement on M.M.P.I.-D scale, Grinker's Feelings and Concern Check List, and the Interpersonal Behavior Scale suggested changes in the direction of less depression. This is an excellent study which illustrates the coding of interpersonal verbal transactions in a group; both as an assessment of social skill and as a measurement of behavior change. However, its application in group therapy requires the use of a special room, where trained observers can take notes about what is going on in the group, without being seen.

Another behavioral technique which has been used in the development of social skills is Modeling. Isele
(1971) did a study to evaluate the effectiveness of modeling on depressive behavior. This study is based on Lewinsohn's theory of depression and on the findings that elimination of deficit conditions and prepotent response patterns can be affected through modeling. Psychometric measures of depression were administered to 50 subjects at base-line, at the end of treatment and at one-month follow up. Subjects were exposed to one of three treatment conditions for two weekly sessions: 1. reinforced model; 2. non-reinforced model; 3. instruction, no-model and two control conditions: 1. no treatment and 2. a control group of non-depressed patients who were exposed to the reinforced model.

The results suggested that all treatment conditions were effective in producing positive changes in depressive behaviors and psychometric scores. Although the group which received instructions with no model exhibited greater change at termination of treatment, at follow up, longer lasting effects were observed in the group who both observed a model and received reinforcement for trying out the new behaviors. Little behavioral or psychometric changes occurred for the non-depressed group. So the findings were consistent with the behavior theory, (statistical data was not given in the abstract. These were the evaluative
results presented by the author).

Other techniques which have been found to be useful in teaching new social skills are: role-playing, behavior rehearsal, home assignments, observational learning, etc. In behavior rehearsal desirable responses to interpersonal conflict situations are practiced under the supervision of the therapist. The client and therapist role play the situation and an assessment is made of the particular deficits in the interaction. Then, by a process of shaping and feedback the individual emits successive behaviors which approximate the desired goal, and is encouraged to try the acquired behavior in the "real" situation. When the behavior is too complicated, observations of a model are used before the shaping procedure.

All the studies presented in this section support the hypothesis that by increasing the individual's social skills it is possible to alleviate his depression. This is probably due to an increase in the amount of positive reinforcement dispensed by others, once the individual possesses the ability to elicit it.

Negative Cognitive Set Hypothesis

In this model the therapy focuses on altering the negative cognitive set with the expectation that the other
symptoms and behaviors characteristic of depression will be eliminated. From Beck's formulation that low self-esteem and expectation of negative outcomes are central of the phenomena of depression, it is hypothesized that a discrete, successful experience improves self-esteem, pessimism and mood. Beck (1974) states: "the tendency to exaggerate the evaluative aspects of situations and to overgeneralize in a positive direction after 'success' offers obvious clues to the therapeutic management of depression" (p. 19). This treatment is similar to the therapeutic procedure for learned helplessness, proposed by Seligman, (to be discussed below). The rationale is that if the person has successful experiences, his cognition and consequently his affect will improve. Data supporting the effectiveness of this therapeutic approach is limited to observations derived from clinical practice. More research is needed in order to obtain conclusive evidence.

Another therapeutic procedure characteristic of the cognitive model is to pinpoint to the client the particular cognitive distortions, misconceptions and maladaptive assumptions through verbal interaction, while encouraging the client to consider alternative interpretations of his experiences. The cognitive process identified by Beck as
responsible for the production and reversal of depression has been operationally defined for therapeutic purposes by Shaw and involves cognitive self-control techniques such as: Self-monitoring, alternate interpretation, and self reward (cited in Beck, 1967). These techniques have been defined as follows:

1. Self monitoring consists of having the client focus his attention on identifying and controlling thoughts or "self verbalizations" which lead to the depressive mood.

2. Alternate interpretation consists of helping the client to assign meanings to events other than the distorted ones that he uses as a matter of habit.

3. Self reward consists of the reinforcers that the individual dispenses to himself. They could either be overt (e.g. going out to dinner) or covert (e.g. thinking positive about oneself).

Mahoney studied the effects of self reward and self punishment in the covert treatment of depression. The patient was requested to list as many positive characteristics descriptive of himself as possible. Then, using the premack's principle, a high probability behavior (i.e. smoking) was made contingent upon the emission of a low probability behavior (i.e. reading positive self statements).

It was found that:
The initial coverants of self-verbalizations of statements, coupled with behavioral rehearsal, began to function as cues for an enriched matrix of coverants which were applied by the client. The increased number of coverants which were approximations to the target performance increased the probability of emission of target behavior (cited in Wright & McDonald, 1974, p. 1338).

Mahoney also used a self-punishment technique of snapping a rubber band around the client's wrist whenever obsessive thoughts occurred. He reports that this procedure was useful in decreasing these thoughts (in Wright & McDonald, 1974).

Nigl (1976) used a treatment method combining self monitoring of thoughts with a thought-stopping technique and self reward. The patient was instructed to keep records about the occurrence of negative self statements; then the technique of thought stopping was explained to her and she was asked to use it whenever she was aware of having a negative thought. After she was aware of one of these thoughts she had to immediately say stop, make a positive statement about herself and record the event on a notebook. At the beginning the negative self-thoughts decreased and she felt less depressed but this technique did not work on days when she was under a lot of pressure. Therefore, there was a substantial fluctuation in the frequency of negative self statements, and it was decided to add a program of self
reward (going out to dinner with husband). This reinforcement was contingent upon the emission of 25 positive self-statements per day. After the fifth session, she terminated the treatment because she felt less depressed, also a measure of the frequency of self-statements indicated an increase in positive self-statements and a decrease in negative ones. A follow up questionnaire given a year later and an analysis of the records which she kept during the period indicated that there had been no remission of symptoms and that the current level of negative and positive self-statements were consistent with the level established at termination. Whereas, previous research had been inconclusive in regard to the efficiency of thought stopping technique by itself, this study suggests that thought stopping can significantly decrease the frequency of a depressed patient's ruminative thoughts when combined with a program of self-reinforcement.

Cooke (1975) used covariant conditioning to alleviate depression in college students. All subjects kept a frequency count of their depressed thoughts throughout the research study. The results showed: 1. covariant conditioning was an effective procedure for changing the frequency of depressive thoughts; 2. although there were significant
differences in the affect of depression in some variables, these were not "caused" by changes in the frequency of depressive thoughts. Thus, the cognitive hypothesis was not supported in this case. These evaluative results were reported by the author. Since no statistical data was given in the abstract, it is not possible to make a critical evaluation in this case. Wilcoxon, Schroder and Nelson (1976) cited 4 case studies where Coverant Control Therapy was used to increase the frequency of positive self thoughts in order to effect changes in the depressed person's self evaluation. They reported that in all the cases cited there was an increase in the frequency of positive self thoughts and a corresponding alteration of depressive like behaviors. However, no data were provided regarding control for other intervening variables, about the specific procedures or about the methods of assessment used.

In regard to alternative interpretations, Ellis' Rational Emotive Therapy techniques are used to dispute the negative cognitive set of the depressed person. Since the beliefs that the client has about activating events are considered to elicit the consequences, in this case the depressive moods, this therapeutic procedure is designed to: 1. uncover illogical thinking; 2. to point this out
to the individual and 3. to teach new thinking and practice new ways of behaving. Once the connection between the irrational beliefs and the mood is made apparent to the patient, the therapist teaches the client ways to "dispute" those beliefs. When the client is able to dispute those beliefs and acquires more "rational" ones, it is hypothesized that he will be able to function more effectively. Nevertheless, no supplementary data has been reported on the effectiveness of this treatment modality.

Although Beck et al., have done intensive research which supports their theoretical formulations, further research is needed in order to establish the effectiveness of treatment modalities derived from his theory.

**Belief in One's Own Helplessness Hypothesis**

Seligman (1975) suggests that therapy consists of the recovery of the belief that responding brings about reinforcement. This is best accomplished by forcible exposure to successful experiences, so that a depressed individual will relearn the relationship between instrumental responding and reinforcement. The induction of mastery of personal effectiveness occurs in the reverse order to which it was originally lost. Consonant with Seligman's therapeutic procedure is the one stated by Bibring (1953), according to
The same conditions which bring about depression (helplessness) in reverse serve frequently the restitution from depression. Generally, depression subsides either, a) when the narcissistic goals and objects appear to be again within reach...or b) when they become sufficiently modified or reduced to become realizable, or c) when they are altogether relinquished, or d) when the ego recovers from the narcissistic shock by regaining its self-esteem with the help of various recovery mechanisms (with or without any change of objective or goal) (p. 43).

There are very few controlled studies designed to test the effectiveness of this particular therapeutic approach. Seligman (1972) established a parallel between his theory and those which we have explained so far e.g. in Burgess' therapy and in graded task assignment, contingencies are arranged so that responding controls reinforcement. The patient's recognition of this relationship alleviated depression. Insofar, as those techniques have been proven effective he states that his treatment is effective. Seligman (1976) cites a controlled group study done by Klein and Seligman in which they elicited and "cured" learned helplessness in humans:

Three groups of subjects were used: 1. non-depressed inescapable noise, 2. non-depressed no-noise, 3. depressed no-noise group. Following pretreatment, non-depressed inescapable noise and depressed no-noise subjects were allowed to solve 0,4 or 12
formation problems. Then the subjects performed on either the noise escape task of Hirato or the skill and chance task of Miller and Seligman... Depressed subjects who have been subjected to inescapable noise no longer showed noise escape deficits, nor did they show skill perceptions of response-reinforcement independence, after they were allowed to solve concept formation problems. So experience in controlling reinforcement reversed the performance and perceptual deficits of both learned helplessness and depression (p. 199).

Seligman's theoretical formulations are rather convincing. He integrates other important theories in his model. However, the treatment that he prescribes of "forced exposure to responding producing reinforcement" is more easily applied in animals than in human beings. Furthermore, successful experiences and feelings of mastery in a particular situation do not always generalize to other situations. So, therapy should be oriented toward mastery of those specific situations in which the individual feels helpless. Other factors which Seligman believes can be useful in the treatment of depression are: electroconvulsive therapy, pharmacological agents, and the passage of time.

In regard to the prevention of recurrence of depression, he states that successful therapy deals not only with the situations that are occurring or occurred in the past but must also provide the client with a wide repertoire of
coping responses. So that he can use those responses when
his usual reactions are not successful in controlling the
reinforcer.

**Life Stress Events Hypothesis**

In line with Seligman's theory, if a person is able to
cope with the inevitable disappointments and traumas in life
his ability to master future stressful events increases.
However, generally in old age there is an imbalance between
the amount of stressful events and the individual's re-
sources to cope with them. In old age there are more ac-
tual and expected losses (death of spouse, friends, separa-
tion, monetary problems, etc.); also the individual is
limited in resources due to physical and social conditions.
Due to poor health or society restrictions there is a limit
in the range of activities an older person can engage in
and from which they can receive reinforcement. There are
several factors which should be considered in the treatment
of depression in old age: 1. increase involvement in re-
warding activities which are still within the person's re-
pertoire of behaviors; 2. since at this age there is usu-
ally more time for rumination, a cognitive approach similar
to the one already presented should be used; 3. family
members, when available, should be involved in the thera-
peutic process and 4. information regarding the use of environmental resources such as housing, meals on wheels, etc. should be provided.

**Failure to Control Interpersonal Situations Hypothesis**

The treatment of depression due to faulty interpersonal situations (e.g. marital) involves: communication skills training; problem solving and negotiation training and contingency contracting (Craighead et al., 1976). The specific communications skills may vary from couple to couple but in general it consists of 1. improving listening skills (i.e. to provide feedback which indicates the person has heard what the other was saying); 2. sharing communication equally (i.e. each person has equal time in which to present their views); 3. reducing aversive behaviors (e.g. negative verbalizations, sarcasm or ridicule). In problem solving and negotiation skills, couples are asked to focus their attention on specific current problems, and they are taught how to work out compromises. In contingency contracting "contingencies are set up to positively reinforce compliance with the contract and to punish failure to comply" (Craighead et al. 1976, p. 443).

They state that authors such a Weiss, Hops and Patterson (1973); Patterson, Hops and Weiss (1974) have
obtained effective results with this therapeutic program. McLean (1976) also obtained results which indicated an improvement in problematic behaviors, mood and communication style as compared to a conventionally treated comparison group. (However, raw data concerning these studies was not given, these are the author's own evaluations).

Variable Cause Hypothesis

In the previous sections several treatment modalities have been applied in cases in which a single variable has been identified as responsible in the occurrence of depression. This section deals with multi-modal therapeutic approaches which assume multivariable cause in depression. Three authors are discussed in this section Wolpe, Lazarus and McLean.

Wolpe considers anxiety to be the underlying cause in the occurrence of depression. Therefore, his therapeutic approach entails the following techniques: relaxation, desensitization and assertiveness training.

Relaxation training is used in order to deal with the anxiety component of depression. It consists in teaching the person to progressively return each muscle to a resting state either by focusing on each muscle or by concentration on the sensations while contracting them and then letting
it go. It is postulated that, since depression usually follows anxiety, or becomes a substitute for it by overcoming the anxiety, depression ceases to appear.

Relaxation is usually the first step in systematic desensitization. Rogers and Kass (1975) developed a method for identifying depression inhibitors. The subject was a 38 year old divorcee who was depressed. Following Wolpe's procedure, a seven item hierarchy was established which included most of her symptoms (i.e. feelings of loneliness, feeling inadequate as a mother, etc.) then the patient was asked to recall any response which had been associated with the diminution or termination of depression in any situation. Since such a response was not available, she was then asked to describe a situation or activity in which she had felt not depressed. The effectiveness of this depression-inhibitor was tested and she reported that this situation terminated her depressive feelings, so it was used on subsequent trials. The first 6 hierarchical items were completed in 8 sessions after which she reported that she was no longer depressed and she was again enjoying social activities. This report illustrates a procedure which could be useful in identifying depression-inhibitors, but, its effectiveness in the desensitization of depression can not
be determined due to the fact that it is an uncontrollable case-study. Lazarus (1968) cites another version of systematic desensitization used in cases where depression is caused by a grief reaction proposed by Dangrove.

He starts by having the patient visualize the person or the 'lost object' in a series of formerly happy and pleasant contexts. Then under conditions of deep muscle relaxation, he slowly moves forward in time gradually progressing to the events of the funeral (p. 84).

These results refer to the author's observations in his clinical practice which do not have much validity as evidence for its effectiveness.

The use of systematic desensitization may be specially useful in cases where the patient is avoiding fear-arousing situations which may otherwise be rewarding for him. (e.g. involvement in interpersonal situations). Wanderer (1973) cites a case in which desensitization of aerophobia made it possible for the person to broaden the range of positive reinforcers. This was combined with thought-stopping procedures and reinforcement of positive self-evaluation thoughts. According to the author this procedure successfully relieved the depression in a 60 year old man.

Assertiveness training has been found useful in increasing reinforcers from interpersonal situation. It
consists in teaching the person to state his feelings, and needs in positive terms. That is, expressing himself without being aggressive (in which case he would interfere with the rights of others) or non assertive (in which case he will deny his personal rights). A number of different techniques are utilized in this process: modeling, behavior rehearsal, shaping and home-work assignments. The person is helped to deal with anxiety provoking situations in a progressive manner. When the person becomes effective in dealing with interpersonal situations, the reinforcement that he derives from them will help him overcome the depression.

When depression is due to exaggeration and prolongation of normal reaction to loss: 1. a physiological component may be present in which case medication would be the treatment of choice; 2. if the overreaction is due to conditioned helplessness due to repeated losses in the past it is necessary to determine if anxiety is a component in which case it should be deconditioned while at the same time a schedule of reinforcement is instituted in order to reward the individual's coping efforts.

Hannie and Adams (1975) did a preliminary study to test the effectiveness of flooding in order to deal with the anxiety component of depression. 27 psychiatric patients
exhibiting symptoms of both anxiety and depression were randomly assigned to one of the three experimental conditions: 1. flooding therapy (F.T.); 2. support therapy (S.T.) and 3. no treatment control group (N.T.C.). (They remained in the unit while the other groups received individual therapy sessions). Pre-treatment and post-treatment measures included the Mental Status Schedule, the Multiple Affect Adjective Check List, the Fear Survey Schedule III, and the WAIS Digit Symbol. The F.T. and S.T. subjects attended three individual therapy sessions a week for three weeks. Subjects were asked to imagine the depressive scene which the experimenter thought to be more crucial, the scene was presented to the subjects until the apparent emotional reaction was judged to be greatly diminished. The presented scenes always included the most distressful possibilities that could be expected to occur in that situation. Significantly different treatment effects were observed on the M. S.S. and the M.A.A.C.L. tests, which indicates that the F.T. group showed more positive changes. Even though, in this study the results indicated that flooding was the most effective regime as compared to supportive therapy and no treatment control groups, the use of this therapeutic technique has been subject to much debate. Until a reason-
able proof of its superiority over other forms of treatment is obtained, it is preferable to use less stressful modes of treatment.

For Wolpe, the overcoming of depression is frequently an "offshoot" of the modification of other reactions, usually anxiety. Systematic research data concerning the effectiveness of these therapeutic techniques is not available; yet, they are widely used in clinical practice.

Lazarus (1973 1974) proposed a multi-modal treatment of depression which is based on the following rationale: patients are usually troubled by a multitude of specific problems, therefore, the treatment should include several interrelated modalities in order to obtain long-lasting therapeutic change. When the patient comes to therapy a systematic exploration of seven modalities is required to identify problem areas. These modalities have been named "BASIC ID" which is an acronym formed by taking the first letter of each category. The modalities are: behavior (e.g. reduced frequency in engaging in positively reinforced activities); affect (e.g. gloomy or anxious feelings); sensation (e.g. back pains); cognition (e.g. devaluative thoughts about self); imagery (e.g. distressing scenes); interpersonal relationships (e.g. secondary gains from symptoms) and
drugs (required to correct physiological problem). This multimodal approach to therapy is related to the problem oriented record approach which has been used recently in psychiatric wards and mental health centers. Although not all patients will evidence problems in every area, this systematic approach will pinpoint the major areas of concern and the relationship between them. Then specific modalities of treatment would be incorporated into a comprehensive therapeutic plan. Lazarus hypothesizes that "durable results are in direct proportion to the number of specific modalities deliberately invoked by any therapeutic system" (Lazarus, 1973, p. 407). This does not mean that the more therapeutic techniques that are used the better off the patient will be. It means that even when one single symptom is presented this symptom is usually related to several areas of functioning, and therefore, several treatment modalities, should be used as required.

This comprehensive treatment transcends "any given system or school of therapy", however, most of the therapeutic interventions are derived from the social learning theory. As Lazarus (1973) declares,
images, stressful relationships, negative sensations and biochemical imbalance (p. 407).

Specifically, when dealing with depressives the goals and techniques of therapy should be: 1. an increase in the number of behaviors, sensations, images, ideas, people and places that the person finds reinforcing; 2. since significant others in the patient's environment are often in a double bind (if they show sympathy to the patient they reinforce his depressive behavior, if they ignore him, the withdrawal of the reinforcers accentuate the depression), it is important to train the patient to emit assertive responses; 3. to increase the reinforcers that can be experienced through every sensory modality; 4. cognitive intervention; 5. social skills training and 6. drug administration when needed. However, no one single modality by itself has long term therapeutic effects.

Lazarus states that 22 out of 26 individuals who had been chronically depressed, some of them despite traditional therapeutic intervention, made significant gain with this approach, within a 3-month period which included one individual and one group session per week. Follow-up data supported the long-term benefits of this approach. These findings were cited by the author, no data regarding controls or
criteria for improvement was presented in the article.

McLean (1976) states that good life circumstances are the ultimate therapeutic agent, and the intervention strategy has the task of enabling the individual to take advantage of them. "Therapeutic decision making" is a dynamic process which involves: 1. the nature of the client's performance deficits; 2. the nature of the client's personal and social environmental resources, and 3. ongoing treatment response. The analysis of data derived from these three sources determines the choice of treatment components.

He identifies 6 skill areas in which most depressed persons are found to be deficient. These areas are: communication (e.g. aversive communication patterns); behavioral productivity (e.g. low frequency or inappropriate); social inter-reaction (e.g. avoidance due to anxiety); assertiveness (e.g. inability to express opinions); decision making and problem solving (e.g. inability to make choices) and cognitive self control (e.g. rumination of bad experiences). He uses a highly structured treatment intervention combining treatment strategies derived from the social learning theory, according to the patients specific needs. The treatment is limited to 12 weeks.

He stresses four points that facilitate therapy: 1.
avoidance of problem, i.e. not dwelling on the person's problem but rather concentrating on accomplishing goal directed performance; 2. avoidance of confrontations on theory and use of theory "buzz words", (this accomplishes less than if the patient is allowed to discover the paradigm by himself); 3. data management focus in order to divert the mood preoccupation to relevant performance and 4. spouse or sponsor involvement. Data on the effectiveness of this therapeutic approach is limited to the author's clinical experience.
Summary and Conclusions

None of the theories which emphasize a single etiological factor as being responsible for depression can adequately explain this complex phenomena. However, each one of them provides treatment modalities which could be useful if integrated in a comprehensive treatment approach such as the multi-modal approach of Lazarus (1973), which emphasizes several important factors in human behavior. The problem is that when many independent variables (treatment modalities) are introduced it becomes more difficult to assess which factor or combination of factors were really responsible for the change. Also, in clinical practice this presents the problem of how many treatment modalities should be included in the treatment program. For example, when a car stalls it could be due to dirt in the carburator or to engine trouble. In the first case, cleaning the carburator will suffice, in the latter case, an engine overhaul may be required. Similarly, in the assessment process the predominant factors of depression (e.g. cognitive distortions, lack of social skills, low activity level, etc.) are evaluated. Since there are different behavioral techniques es-
pecially designed to deal with each factor one or several techniques may be incorporated into a treatment program as required in each individual case.

The behavioral therapeutic approach appears to have several assets: 1. It is optimistic; that which is learned can be unlearned. The individual is considered to have an influence upon both his past and his future rather than being a passive victim of them. Even his depressive behavior is considered to be a way of acting upon his environment. Although, learning occurs as a result of the antecedents and consequences, therapy provides the means to unlearn maladaptive responses and adopt more effective patterns of responding.

2. It is non-judgmental. Behaviors are not labeled pathological, they are maladaptive only if and to the extent that it is disturbing for the individual. Sometimes the diagnostic label assigned to a patient is more destructive than helpful, (e.g. it is more useful to know that a person lacks social skills than to say that he is suffering from a psychotic withdrawal reaction). In both cases, it could be predicted that the chances of this person interacting with others are very slim.
thus, making it more easily validated. The focus is on the behaviors which are occurring now along with the events which tend to precede or follow them. Here, there is no searching for hidden motives and instincts in order to explain the behavior.

4. In the assessment period the behavioral therapist will ask the following question in dealing with a depressed patient: What are the "critical" depressive behaviors? This question must be answered in specific, concrete, observable terms which lend to an operational definition of depression in "each" case. Once this question is answered therapeutic goals are set, this would result in an outline of treatment which is geared toward the specific needs of each individual. Furthermore, in behavior therapy the assessment and treatment are intertwined so that a continuous evaluation of its effectiveness can be made.

In general, the results obtained from the use of behavioral treatment modalities in depression appear encouraging. There is clinical evidence that a variety of behavioral techniques can ameliorate the course of depression states. Nevertheless, certain problems are made evident when evaluating the results which preclude final judgement regarding the effectiveness of depression. A great part
of the research involves anecdotal case studies which have included relatively few subjects or which have not employed control groups. Well developed experimental designs such as multiple base designs, changing criterion designs and control group designs should be used more often in order to demonstrate causal relationships between the treatment strategy and behavior change. Only then, the effectiveness of the treatment strategy or strategies used can be evaluated. In cases where a control group is included in the experimental research, statistical analysis is required to demonstrate that the changes that occurred in the group which received treatment are statistically significant. In addition, there is lack of sufficient follow up data which makes it impossible to determine which treatment modality is superior in obtaining long range effects.

These preliminary results provide encouragement for others to do more scientific research using adequate samples, control groups, assessment techniques, statistical tests of significance and follow up evaluation. In order to do cross study comparisons, it is necessary to define depressive behaviors objectively. Also, variables such as therapist characteristics, patient characteristics, treatment objectives, treatment procedures and temporal variable
of session need to be explained. Only then, would it be possible to identify the treatment modality or modalities which are more effective in the treatment of depression in a particular situation and for a particular type of individual.
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