EFFECTS OF COGNITIVE-BEHAVIOR MODIFICATION UPON DEPRESSED OUTPATIENTS

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ABSTRACT

EFFECTS OF COGNITIVE-BEHAVIOR MODIFICATION UPON DEPRESSED OUTPATIENTS

By

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The purpose of this study was to evaluate the effects of cognitive-behavior modification upon depressed individuals. These individuals were clients of an out-patient community mental health center. The effects of cognitive-behavioral intervention were assessed using a client self-rated scale of depressive thoughts and feelings, and by a self-and-other-rated scale of depressive behavior.

Four graduate students in counseling with training and experience in behavior-modification were trained in the theory and practice of the cognitive modification of depression. Specific training procedures for these counselors are described. Three therapists were each assigned to three subjects, and the fourth therapist was assigned to two subjects. The 11 subjects, all females, were selected from 39 clients of a community

mental health center referred for possible inclusion in this study by mental health staff persons.

Subjects were accepted for the study based upon specified screening criteria including clinical signs, observed client behavior, client history, presenting problem(s), MMPI profile, Shipley-Hartford scores, and score on the Beck Depression Inventory (BDI).

Following each subject's acceptance into this study, she appeared for an interview with this investigator. She was furnished a copy of the Beck Depression Inventory and pre-dated copies of daily response cards. The subject was requested to complete the BDI questionnaire each day throughout the study.

The subject was requested to bring two significant others to the interview with this investigator. The significant others were to serve as raters for her daily behavior. The subject and the raters were furnished copies of the Depression Behavior Rating Scale, an abbreviation of the NOSIE-30, to complete each day on a daily predated response card.

Subjects and their raters completed the daily response cards through a baseline phase of 7, 10, or 14 days, a two-week treatment phase, and a two-week reversal phase. Data are plotted for each subject for each experimental day and across four dependent variables. The Beck Depression Inventory was one of

the daily repeated measures. Items from the Depression Behavior Rating Scale yielded the three remaining daily repeated measures--Depression items, Psychomotor Retardation factor, and Social Interest factor.

The treatment intervention consisted of four sessions over a two-week period. During the first session the therapist established rapport and structured the treatment phase for the subject. The subject was furnished a pamphlet, "Coping with Depression," and the booklet was discussed. The therapist suggested that the subject read the pamphlet once each day until the second treatment session, and whenever else she experienced feelings of depression.

During the second treatment session, the therapist assisted the subject in identifying at least five depressive cognitions and their corresponding challenges. The subject was instructed to read the list of depressing cognitions and challenges before engaging in high probability behaviors until the third session.

During the third session, the therapist assisted the subject in generating a list of at least five positive self-evaluatory statements. The subject was to read the list before engaging in a high probability behavior before the last treatment session.

In the fourth session, the therapist reviewed the cognitive treatment of depression, reinforced

subject learning, and scheduled the subject for a follow-up appointment with this investigator two weeks later.

At that time the subject's current level of psychological functioning was evaluated clinically, and she was administered a second MMPI. Any concerns she had regarding the treatment were discussed, and if the subject desired, further mental health services at the center were offered.

A multiple-baseline design was employed in the study. Subjects self-reported level of depressive symptomatology (BDI) and self-and-other-rated depressive behaviors (BRS) were charted daily as repeated measures. The treatment effects were contrasted across four dependent variables and across individuals at the same relative points in the treatment schedule.

Based upon two assumptions made by Aaron Beck concerning the effects of the cognitive modification of depression, 12 research hypotheses were generated for this study. For each of the four dependent measures of depression, it was hypothesized that during the treatment phase the subject's rated depression would decline. The depression rating on each measure would rise again during the reversal phase, a second hypothesis. Finally it was hypothesized that depression scores during the reversal phase would not rise to the level of the baseline phase.

The data from each subject are presented in an intensive case study format. The subject's performance on each dependent variable is presented graphically, and significance tests have been performed for all 12 research hypotheses on the data from each subject. Finally, supplementary data, such as pre-posttreatment changes in the subject's MMPI profile, are presented along with a discussion of the outcome of treatment and her current therapeutic status.

The research hypotheses are supported by varying proportions of subject data. Specifically, it was found that scores on the Beck Depression Inventory, the Behavior Rating Scale Depression items, and the Behavior Rating Scale Psychomotor Retardation factor decreased during the treatment phase, and rebounded after the termination of treatment, but remained lower during the reversal phase than before the treatment intervention. Scores for the Behavior Rating Scale Social Interest factor for two subjects support the hypothesis that subjects' performance during the treatment phase was different than during baseline, but the other two research hypotheses for Social Interest were supported by data from four subjects.

Supplementary data presented for all subjects included mean MMPI profiles for pre- and posttreatment testing situations. The changes in the MMPI profile

over the time of the experiment are discussed, and results of statistical tests of the changes in profile are presented. It was found that the posttreatment MMPI mean profile was well within normal limits, and that reductions on five of the ten clinical scales for the group were statistically significant.

It was concluded that this cognitive-behavioral treatment was to varying degrees effective in reducing depressive symptomatology and behavior among clients of an outpatient clinic. The research findings are discussed, as are implications of the present study for practice and further research.

EFFECTS OF COGNITIVE-BEHAVIOR MODIFICATION UPON DEPRESSED OUTPATIENTS

By

Verne Gordon Schmickley

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CHAPTER I

INTRODUCTION AND REVIEW OF THE LITERATURE

Magnitude of the Problem of Depression

Depression is a painful emotional condition which has plagued mankind at least as long as history has been recorded, and no doubt before that. Depression has been described by Hippocrates, by Biblical scholars in the Book of Job, and by Shakespeare in his plays. Known throughout the ages as "the black bile," "melancholia," "manic-depression," or "depression," there have been as many labels and types as there are theories of the causes and treatment of the condition (Kushner, 1974).

Depression is no respector of social, economic, or educational level, fame, or political power; such individuals as Abraham Lincoln, Ernest Hemingway, and Marilyn Monroe have suffered from depression (Kushner, 1974), as have Senator Thomas Eagleton and ex-Presidents Johnson and Nixon. Feelings of worthlessness, helplessness, and pessimism characterize this most common form of psychiatric disorder in the United States today

(Kushner, 1974); indeed, depression is often referred to as "the common cold of mental disorders."

Grinker and Nunnally (1970) and associates (Grinker, Miller, Sabshin, Nunn, & Nunnally, 1961) became interested in the depressive syndrome because:

> It seemed to have become the forgotten disease although about half of the population in private psychiatric hospitals were admitted and discharged with this diagnosis. . . . The frequency, painfulness, and family disruption caused by depression stimulated little work with the syndrome, and little had been added to its understanding since Kraepelin's and Bleuler's descriptions, which were only somewhat better than the accounts left by the ancients. (Grinker & Nunnally, 1970, p. 392)

It is estimated that eight million people in the United States are currently receiving treatment for depression, and 600,000 of these are hospitalized because their normal functioning is severely impaired (Kushner, 1974). In terms of numbers of individuals affected, depression is beginning to rival schizophrenia as the nation's number one mental health problem, and it is estimated that 10% of the general population will suffer a clinically significant depressive episode at some time in their lives (NIMH, 1973).

Aaron T. Beck, M.D., probably the foremost contemporary authority on depression, writes that it is "the most common psychiatric disorder treated in office practice and outpatient clinics. The study of depression is important, not only because of the human misery it

causes, but because of its byproduct, suicide" (Beck, 1974a, p. 61). Every year 20,000 Americans commit suicide (Kushner, 1973), and Beck (1974) concludes that depression is among the leading causes of death in this country.

Overview of the Problem of Depression

Many writers (e.g., Kushner, 1974) have described depression as merely being on a continuum with other unpleasant emotions: from "normal Monday-morning blues," to sadness, grief, disappointment, despondency, and finally depression. An individual's "level" of depression would depend upon the frequency, intensity, and duration of his unpleasant feelings. Other authorities take an opposite view, such as Bernard J. Carroll, M.D., who views depression as "an illness which is categorically different from normal mood lowering" (1974, p. 2). Peter M. Lewinsohn, Ph.D., a behavior therapist, essentially takes a moderate position, and assumes depression "to be a continuous variable which can be conceptualized as a state (which fluctuates over time) but also as a trait (some people, 'depressives,' are more prone to becoming depressed than others)" (1974, p. 65). (Italics mine.)

Lewinsohn provides an excellent description of depression:

> The term "depression" is used to refer to the syndrome of behaviors which have been identified in descriptive studies of depressed individuals (e.g., Grinker et al., 1961), including verbal statements of dysphoria, self-depreciation, guilt, material burden, social isolation, and somatic complaints; it also involves a reduced rate for many behaviors. (Italics mine.) (1974, p. 65)

Another behaviorist, Martin E. P. Seligman, Ph.D., similarly describes the phenomenon:

> Depression . . . does not have a necessary condition that defines it. Rather, it is a convenient diagnostic label which denotes a constellation of symptoms [= a syndrome], no one of which is necessary. (Italics mine.) (1974, p. 86)

Beck (1974a) delineates the signs and symptoms which characterize depressed individuals:

> Emotional: Sadness or apathy; crying spells, self-dislike; loss of gratification; loss of feelings of affection; loss of sense of humor.
> Cognitive: Negative self-concept; negative expectations; exaggerated view of problems; attribution of blame to self.
> Motivational: Increased dependency; loss of motivation; avoidance, indecisiveness; suicidal wishes.
> Physical and Vegetative: Loss of appetite; sleep disturbance; fatigability; loss of sexual interest. (p. 62)

Similarly, Seligman (1974) describes the manifestations of depression:

> Passivity: the slower response initiation, retardation, and lowered amplitude of behavior . . .
> Negative expectations: the readiness with which depressed patients view their actions, even if they succeed, as having failed or being futile . . .
> The sense of helplessness, hopelessness, and powerlessness which depressed patients frequently voice. (Italics mine.) (p. 89)

Seligman sees clinical depression as related to his concept of learned helplessness, which will be elaborated upon in a later section. He writes:

> The label "depression" denotes patients with negative cognitive sets about the effects of their own actions, who become depressed upon the loss of an important source of gratification--the perfect case for learned helplessness to model. (Seligman, 1974, p. 85)

Once the symptoms of depression develop, they generally increase in severity until the condition levels off, and then the symptoms improve. The median duration of the depressive episode is said to be three months. In most individuals the intervals between depressive episodes are symptom free; there is, unfortunately, a tendency for depression to recur at some later time (Beck, 1974a).

The goals of therapeutic strategies have been to reduce the frequency, intensity, duration, and recurrence of depression. There have been therapeutic interventions devised to fit any of the numerous theories of the cause of depression, e.g. psychoanalytic, ego-psychological, and physiological/psychopharmacological. A review of the various theories and their corresponding therapeutic interventions is beyond the scope of this dissertation; the interested reader is directed to the excellent and comprehensive reviews by Beck (1972), Becker (1974), and Friedman and Katz (1974). What will be discussed in the following are theories and/or therapies which offer great promise for the amelioration of the problem of depression: behavior modification, learned helplessness, and cognitive restructuring.

Behavioral Theory and Modification of Depression

Although depression is one of the most frequently occurring problems of mental health, social scientists in general have neglected the problem until recently, and a systematic behavioral theory of depression remains to be developed (Becker, 1974). Lazarus (1968) attributes much of this void to the difficulties in operationally defining and measuring depression. Beck (1974a) notes that their avoidance of the subjective components of depression has subjected behaviorists to valid criticism (e.g., American Psychiatric Association, 1973), and that behavioral theory has thus far been applied only to limited aspects of depression. Krasner (1971) states that depression may be the last type of behavior to come within the behavior therapy paradigm.

Fortunately, this trend is changing. Recently, innovative theory and research on depression have begun to flourish among certain social learning behaviorists (Becker, 1974). These developments will be briefly traced chronologically.

In his classic paper, Ferster (1965) was the first to write that the state of clinical depression is a consequence of decreased reinforcement. Ferster has since (1974) expanded and elaborated his notions of depression, but this basic assumption remains unchanged.

Lazarus (1968) similarly conceptualized depression as a consequence of inadequate or insufficient reinforcement.

Lazarus (1968) prescribed three specific behavioral techniques for the treatment of neurotic depression: time projection with positive imaginal reinforcement; affective expression of "repressed" anger; and behavioral deprivation and retraining to regain reinforcement. Burgess (1969) has successfully applied contingency management strategies to the extinction of depressive behaviors (by shaping competing, nondepressive behaviors).

Jackson (1972) maintains that in the development of depression, the person's behavior has become ineffective in securing positive reinforcers from his environment. This is due to alterations in reinforcement schedules or changes in significant discriminative stimuli under which behaviors were typically emitted. Jackson has shown that self-reinforcement techniques can serve to assist depressed individuals to regain control over their sources of reinforcement. (Excellent reviews of literature of behavioral self-control may be seen in Cautela, 1969; Kanfer & Phillips, 1970; Elson, 1972; Goldfried & Merbaum, 1973; Johnson & Elson, 1974; Mahoney, 1974; Mahoney & Thoresen, 1974; Thoresen & Mahoney, 1974.)

The greatest strides toward a behavioral model and therapy of depression have been made by Lewinsohn's

social learning group at Oregon. For the past six years a comprehensive, behaviorally oriented theory of depression has been developing. The thrusts of the research have been:

> . . . to test hypotheses about the socio-environmental reinforcement conditions surrounding depression,
> . . . to develop systematic and replicable treatment strategies for depressed individuals, and
> . . . to provide tools to assess and to evaluate behavior change. (Lewinsohn, 1974, p. 65)

The Lewinsohn group has been creative and prolific in its study and description of behavioral applications to depression (cf. Lewinsohn & Shaw, 1969; Lewinsohn & Graf, 1973; Lewinsohn, 1974). The behavioral interventions successfully used appear to fall into five categories (Lewinsohn, 1974):

1. Increasing the individual's activity level;
2. Identification of potential reinforcers for the depressed individual;
3. Induction of affects incompatible with depression;
4. Enhancing the individual's instrumental skills; and
5. Increasing the drive level of the depressed individual.

Lewinsohn's applications of behavior therapy successfully meet the depressed individual's needs perceived by Becker (1974) for increased positive reinforcement of nondepressive behaviors.

The recent contributions of behavior theory to depression are certainly exciting, both heuristically and clinically. Becker concludes that:

> It is too early to assess the contribution of behavioral approaches to depression, but their emphasis on testable formulations must inevitably sharpen conceptualizations and expand the essential data base for adequate theory building and rational treatment programs. (1974, p. 119)

Learned Helplessness and Depression

Rivaling the Lewinsohn group in the production of research which holds exciting possibilities for a learning theory and therapy of depression is the work of Seligman and associates (Seligman, 1969, 1973, 1974, 1975; Seligman & Hager, 1972; Seligman, Maier, & Solomon, 1971).

Seligman is an experimental psychologist at the University of Pennsylvania who has extensively studied the effects upon infrahuman subjects of unpredictable and uncontrollable aversive events. A description of his well-controlled and sophisticated methodology is beyond the scope of this discussion; the reader is referred to Seligman's own descriptions (Seligman, 1974, 1975; Seligman & Hager, 1972; Seligman et al., 1971) or to excellent summaries by Becker (1974) or by Thornton et al. (1974).

Seligman subjected experimental dogs to massive and sustained electrical shock, which they could not

predict nor escape from. When the dogs were later included in standard escape-training trials, two-thirds of the experimental animals failed to learn to escape or avoid shock (all naive control animals learned to escape or avoid shock):

> The experimental dogs tended to manifest two behavioral deficits. First, they attempted few adaptive responses, and second, even when they displayed an adaptive response, they failed to learn from it. . . . They typically reverted to the passive acceptance of 50 seconds of severe pulsating shock. The latter behavioral phenomena have been termed learned helplessness. . . . (Becker, 1974, pp. 112-113)

Seligman describes the experimental phenomenon:

> We use the term "learned helplessness" to describe the interference with adaptive responding produced by inescapable shock and also as a shorthand to describe the process that we believe underlies the behavior. So learned helplessness is defined by two behaviors: (1) dogs that have had experience with uncontrollable shock fail to initiate responses to escape shock or are slower to make responses than naive dogs, and (2) if the dog does make a response that turns off shock, it has more trouble learning that responding is effective than a naive dog. (1974, p. 86)

Seligman sees the behavioral deficits as having a cognitive cause.

> Learning that one cannot control important events . . . that responding and reinforcement are independent results in a cognitive set that has two basic effects: fewer responses to control reinforcement are initiated, and associating successful responding with reinforcement becomes difficult. (Seligman, 1974, p. 97)

The notion of stimulus generalization is interwoven with the learned helplessness cognitions. The more closely subsequent traumatic experiences resemble the inescapable

and uncontrollable conditions under which passivity was acquired, the more likely it is that passivity will generalize to subsequent conditions, even though the animal may actually be able to escape from the situation (Becker, 1974).

Seligman (1974) suggests that the phenomenon of learned helplessness provides a laboratory analogue of human neurotic depression. More important, learned helplessness provides a model for understanding the development of depression in humans. Seligman admits that his evidence is at this point tentative. But the work of Seligman and his associates provides an exciting and long-in-coming rapproachment between "pure" research and clinical endeavors.

Bibring (1953), a psychoanalytic theorist, viewed helplessness to achieve one's goals as a primary cause of human depression (Beck, 1974a). Engel (1968) described the "helplessness-hopelessness" emotion--the patient's feeling that he cannot help himself, and that he is unlikely to be helped by outside influences. Grinker and Nunnally (1970) describe a factor characteristic of depression: " . . . helplessness, hopelessness, failure, sadness, unworthiness, guilt, and internal-suffering. There is a self-concept of 'badness'" (p. 396).

Beck (1974d) sees strong relationships between his own cognitive theory of human depression (to be

discussed in the next section), and Seligman's findings on learned helplessness. The idea that one is helpless is an irrational belief (Ellis, 1962) held by many depressed individuals. He "finds evidence of his own worthlessness in every experience and feels compelled to blame himself for his faults" (Beck, 1974a, p. 63). Beck has done extensive research on the content of dreams of depressed individuals. In most of the dreams, the depressed individual sees himself as "the loser," including airplanes being missed by a split-second, exams being failed, slot machines giving the jackpot to the very next gambler, and so forth (Kushner, 1974). Beck's dream studies (1974a) concluded that the depressed individual regards himself deprived of an important source of gratification and defective in certain attributes. The depressed individual has all-too-successfully learned helplessness.

Seligman has found only one treatment which "cures" helplessness in dogs. The animal has learned that nothing he can do will terminate the shock, so his negative expectations must be changed. The dog must be forcibly dragged from side to side in the shuttle box, so that eventually he learns that the trauma can be escaped (1974). But successful therapy should be preventive, in Seligman's (1974) view, arming the patient against future depressions.

Obviously, depressed humans cannot be physically forced into feeling better. Beck (1974d) reasons that it must be cognitively demonstrated to the patient that he is able to succeed:

> "Paralysis of the will" may be considered as a result of the patient's pessimism and hopelessness; since he expects a negative outcome, he is reluctant to commit himself to a goal or undertaking. Conversely, when he is persuaded that he can succeed at a particular task, he may be stimulated to pursue it. (Beck, 1974a, p. 71)

How Beck does this is discussed next.

Cognitive Theory and Modification of Depression

An interesting change is taking place in the field of behavior therapy. Some of its most ardent and "hardcore" practitioners have begun to see merit in the theories and techniques of more psycho-dynamically-oriented therapists (American Psychiatric Association, 1973). The result has been the development of an increasingly powerful and exciting psychology, in which all manifestations, overt and covert, of human behavior become active areas of investigation and possible modification (Murray & Jacobson, 1971).

Even B. F. Skinner acknowledges the validity of the resurgence of interest in internal events:

> A small part of the universe is contained within the skin of each of us. . . . We feel it and in some sense observe it, and it would seem foolish to neglect this source of information just because no more than one person can make contact with the inner world. (1974, p. 21)

Skinner views perceptions and reports of the inner world as clues (a) to past behavior and the conditions affecting it, (b) to current behavior and the conditions affecting it, and (c) to conditions related to future behavior.

Nevertheless, he cautions us to examine our own behavior as we make contacts with the inner world. Although attractive, the study of the world within the skin has its potential pitfalls: "in teaching self-knowledge (1) the verbal community must make do with rather primitive nervous systems, and (2) it cannot fully solve the problem of privacy" (Skinner, 1974, p. 31). But behaviorism has progressed since Skinner (1953) first wrote of "the world within one's skin" more than 20 years ago. The recent advances in the experimental analysis of behavior now allow us to study internal events, and behaviorism "can now analyze, one by one, the key terms in the mentalistic armamentarium" (Skinner, 1974).

One such mentalistic term is "thinking," or what an individual says to himself (Ellis, 1962). As long as the individual's thinking is adaptive, there is no problem. But, according to Ellis, once thinking becomes maladaptive (irrational), problematic emotions and behaviors result. Ellis' assumptions have received much anecdotal and clinical support (Ellis, 1962, 1971,

1973), but only recently (cf. Elson, 1974) have the theoretical assumptions been directly studied. Russell and Brandsma (1974) studied:

> . . . the assumptions of Albert Ellis' ABC theory of psychopathology which relates implicit verbalizations to emotional arousal. . . . The ABC theory was supported by the galvanic skin response on three of the five hypotheses under investigation.

Rational-emotive psychotherapy (RET) has been called both a type of and an essential component of other techniques of behavior therapy (Beck, 1970; Ellis, 1971, 1973; Lazarus, 1971, 1974a, b). The value of RET in changing behavior has gained considerable experimental support through the efforts of Donald Meichenbaum and associates at the University of Waterloo. Meichenbaum (1973, 1974a, b) and Meichenbaum and Cameron (1974) have successfully demonstrated that behavior modification techniques can be used to modify what an individual says to himself. Meichenbaum and Cameron (1974) review several applications of self-instructional methods used to teach "healthy talk" to various client groups, including impulsive children, schizophrenics, and neurotics. Clients may be taught to change their evaluations of environmental consequences:

> Our research on cognitive factors in behavior modification has highlighted the fact that it is not the environmental consequences per se which are of primary importance, but what S says to himself about the consequences. However, what S says to himself, that is how he evaluates and interprets these events [Ellis' (1962) irrational beliefs], is explicitly

> modifiable by many of the behavior therapy techniques which have been used to modify maladaptive [overt] behaviors. (Meichenbaum & Cameron, 1974, p. 103)

Thus, cognitive events become behaviorally modifiable.

Meichenbaum and associates did not originate this notion. Jerome Frank (1961) noted that people tend to change their attitudes to conform with what they have been conditioned to say to themselves. Lloyd Homme (1965) had argued that what one says to himself influences his self-esteem, and that the self-esteem can be altered by changing one's thoughts and feelings. These internal events are called "coverants" (covert operants) by Homme, and he assumes that they may be controlled by manipulating reinforcing events based upon Premack's principle (1959).

The common cognitive changes observed in depressed individuals (low self-esteem, pessimism, guilt, learned helplessness, etc.) have been reviewed. Previous authorities have viewed these cognitions as <u>consequences</u> of depression. Instead, Beck (1967, 1972) assigns primary significance to these cognitions as the <u>causes</u> of depression (Lewinsohn, 1974). "By proposing that the cognitive disorder <u>precedes</u> rather than follows the depressed state, he contributes alternative ways of thinking about etiology and approaches to therapy" (Katz, 1974, p. 301).

Beck takes a radical stance, and views depression as a thought disorder:

> Although thought disorders are traditionally associated with schizophrenia and paranoia, recent work has uncovered systematic distortions of reality in depression. These findings cast doubt on the classification of depression as a primary mood disorder, and may also provide clues for the treatment of the disease. (1963, pp. 62-63)

Beck (1967) defines a "depressive cognitive triad" of a set of negative evaluations of the self, of the outside world, and of the future:

> This triad is seen as the key to the consequences of depression, such as the lack of motivation, the affective state, and other internal and behavioral manifestations. The depressed person's cognitions lead to misinterpretations of experiences, and hence many of the secondary responses are logical consequences of such misinterpretations. The depressed person is locked in an insoluble situation, the result of which is future despair. (Lewinsohn, 1974, p. 64)

The first component of Beck's "cognitive triad" is a negative view of the self: The depressed individual sees himself as deprived of gratification, inadequate, and worthless. He believes that he is undesirable, and perceives himself as defective (Beck, 1974a). He believes he is responsible for irreversible and critical events, and he is beset with self-coercive injunctions such as "should" and "must" (cf. Horney, 1950). No matter how well he performs, he is plagued with the constant feeling that it is never good enough (Becker, 1974). The second component of the cognitive triad is a negative view of experiences. The patient

interprets all of his interactions with his environment as overdemanding, blocking, depriving, depreciating, and defeating (Beck, 1974a, Becker, 1974). Finally, a "negative view of the future permeates his ideation. As he looks ahead, the patient sees an indefinite continuation of his present difficulties and a life of unremitting deprivation, frustration, and hardship" (Beck, 1974a, p. 71).

The causes of the negative cognitive set are traumatic life experiences. Once the cognitions are established, however, events with cue properties similar to the original traumatic event may trigger inappropriate depressive cognitions (Becker, 1974). Depressed patients tend to distort their experiences, and misinterpret and exaggerate aversive events (Beck, 1972). The patients' negative cognitions "contribute to . . . symptoms of depression such as sadness, passivity, self-blame, loss of pleasure responses, and suicidal wishes" (Beck, 1974b, p. 2). Thus, due to conditioning of depressive cognitions, the individual's emotional response is disproportionate to the present aversive situation--he has learned helplessness:

> The predictions of depressed patients tend to be overgeneralized and extreme. Since the patients regard the future as an extension of the present, they expect a deprivation or defeat to continue permanently. If a patient feels miserable now, he assumes he will always feel miserable. The absolute, global pessimisms are expressed in statements such as "Things won't ever work out

> for me," "Life is meaningless," "It's never going to be any different." The depressed patient judges that, since he cannot reach a major goal now, he will never be able to achieve it. Nor can he see the possibility of substituting other rewarding goals. Moreover, if a problem appears insoluble now, he assumes that he will never find a way of working it out. . . . (Beck, 1974c, pp. 12-13)

Becker (1974) notes that this stimulating and provocative theory of depression "is highly related to clinical data." From the striking similarity of Beck's above description of the depressed individual with Seligman's (1974) description of the learned helpless animal, it appears furthermore that Beck's theory is substantially grounded in the laboratory.

What has arisen, then, is a theory of human depression based upon the work of Seligman and of Beck. Depression would appear to be a condition resulting from the conditioning of negative cognitions about one's self. This position, as noted by Becker (1974), generates several testable hypotheses, and results in implications for the treatment of human depression.

In essence, the cognitive treatment of depression involves assisting individuals in becoming aware of the thoughts which mediate unpleasant emotions and maladaptive behaviors, and in teaching them to think more effective and adaptive self-statements (Meichenbaum & Cameron, 1974). This approach is compatible with what Skinner (1974) calls an experimental analysis of behavior "which

goes directly to the antecedent causes in the [internal] environment." Lewinsohn (1974) states that once the individual is taught to correctly label his cognitions, he will be in a better position to deal with his emotional predicament. The underlying negative set is modified so that the total syndrome of depression may be influenced. This is the employment of cognitive modification (Beck, 1974b).

Beck's treatment focuses on the specific depression-generating cognitions of the individual. These maladaptive cognitions have been condensed and compressed into a "shorthand," so that complicated series of depressive thoughts may occur in an instant. These "self-statements" or "internalized verbalizations" (Ellis, 1962) have been called "automatic thoughts" by Beck (1972). Beck's treatment interventions pinpoint the specific conditioned cognitive distortions and demonstrate their invalidity. Beck (1972, 1974b) assists the individual to see himself as a "winner" rather than a "loser," as adequate rather than helpless, by changing the negative cognitive set to more optimistic expectations (similar treatments of depression are described in Hauck, 1971a, b; Lazarus, 1971b, 1974a, b; Schmickley, 1973; and Gillette et al., 1974).

Theoretical Conclusions

Beck makes two conclusions which follow from his theory and assumptions of the cognitive modification of depression. If these conclusions are correct, Beck's theory has tremendous potential for the understanding, treatment, and prevention of neurotic depression in humans. To this writer's knowledge, the conclusions *per se* have not been explicitly validated. The conclusions thus become the hypotheses of this proposed study:

> (1) By pinpointing the patient's specific cognitive distortions and demonstrating their invalidity through behavioral or cognitive techniques, the psychotherapist can achieve a rapid improvement in the symptoms of depression. (Beck, 1974c, p. 19)
>
> (2) Since each of the components of depression [behavioral, cognitive, emotional, motivational, or physiological] contribute to the other components, . . . an improvement in any one problem area [e.g., cognitive] would lead to an improvement in other areas [e.g., behavioral], which would finally spread to include the entire syndrome of depression. (Beck, 1974c, p. 3)

The specific research hypotheses generated by Beck's conclusions are presented in the next chapter.

CHAPTER II

PROCEDURES

Population

Subjects were selected from a population of adult new-referral clients seen at a community mental health center. The center is located in a county seat community in Michigan. The county is predominantly rural but has some "bedroom" communities, and has a population of approximately 70,000 people. The center receives self-referred clients and individuals referred by helping professionals, such as physicians and social service caseworkers.

Sample

A sample of 11 clients was selected for the study from the total population of new referrals at the mental health center during the period April 1 through October 10, 1975. Staff members referred 39 clients who appeared to them to manifest clinical signs of depression. The 11 subjects finally selected for the study were classified "depressive neurotic" based upon the clinical diagnostic procedures and psychological test data described below.

Measures

Clinical Impressions

A pool of possible subjects was selected from the client population at the mental health center. Possible subjects were new referrals who appeared to mental health staff persons to be suffering from neurotic depression, as defined in DSM-II (American Psychiatric Association, 1968). Although psychiatric diagnostic accuracy has encountered increasing and recent criticism, Beck (1967) defends the practice as being a necessary subjective appraisal which is better than no judgment at all, and which yields an inter-rater agreement of 63% for the category "neurotic depressive reaction." The psychodiagnostic judgments involved in this study were merely precursors to further, more objective, selection criteria.

Thirty-nine such possible subjects were next interviewed by this investigator, who employed more rigorous psychodiagnostic criteria previously used in other studies:

> Objective signs of depression in the facies, speech, posture, and motor activity; a major complaint of feeling depressed or sad; and at least 11 of the following 14 signs and symptoms--loss of appetite, weight loss, sleep disturbance, loss of libido, fatigability, crying, pessimism, suicidal wishes, indecisiveness, loss of sense of humor, sense of boredom or apathy, overconcern about health, excessive self-criticism, and loss of initiative. (Beck, 1972, p. 229)

Additionally, individuals showing evidence of organic brain syndrome, functional psychosis (including manic-depressive psychosis and all of the schizophrenias), or some other psychopathological state which was more prominent than depression (Beck, 1972) were excluded from further study. Available reports from family members, summaries of other mental health contacts, and previous psychological test data were reviewed by this investigator before subjects were included in the study.

In treating depressed individuals, there is always the risk of suicide, and there are ethical issues involved when subjecting depressed individuals to experimental techniques. To minimize the risks of suicide, this investigator discussed their suicidal intentions with clients during the evaluation interview. All clients were required to agree not to attempt to kill themselves during the course of the depression treatment program. They were urged to call the clinic at any time they might have suicidal intentions, and they were reassured that they would receive immediate supportive crisis intervention therapy. Any individuals who appeared to this investigator to be potentially suicidal, and/or who would not make a verbal contract not to attempt suicide, were referred to other mental health therapists at the center and were not involved in this study.

MMPI

The Minnesota Multiphasic Personality Inventory (MMPI), developed by Hathaway and McKinley (1943), is a widely used indicator of psychopathology. Although the instrument has suffered increasing criticism by theoreticians such as Mischel (1968) and clinicians such as Beck (1974a), the tremendous influence of the MMPI upon assessment research and psychodiagnostic practice cannot be denied (Goldberg, 1974). In his comprehensive review of the literature almost 30 years ago, Ellis (1946) wrote that there was "no other personality inventory on which so much theoretical and practical work" had been done. But more important than the sheer quantity of attention focused on the MMPI, Ellis concluded that no other psychodiagnostic inventory was more valid (Horrocks, 1964).

The MMPI consists of 13 standard scales. Three of the scales are validity indicators: L (lie), F (validity), and K (correction). The remaining clinical scales are: Scale 1 - Hypochondriasis (Hs); Scale 2 - Depression (D); Scale 3 - Hysteria (Hy); Scale 4 - Psychopathic deviancy (Pd); Scale 5 - Masculinity-feminity (Mf); Scale 6 - Paranoia (Pa); Scale 7 - Psychasthenia (Pt); Scale 8 - Schizophrenia (Sc); Scale 9 - Hypomania (Ma); and Scale 0 - Social introversion (Si) (Hathaway & McKinley, 1951).

The Depression scale "was established to measure the degree or depth of the clinical symptom pattern of depression. This mood state is characterized generally by pessimism of outlook on life and the future, feelings of hopelessness or worthlessness, slowing of thought and action, and frequently by preoccupation with death and suicide" (Dahlstrom, Welsh & Dahlstrom, 1972). Dahlstrom et al's picture of depression is essentially similar to Hathaway and McKinley's (1956b) description of "symptomatic depression" measured by Scale 2. Scale 2 was shown to differentiate to a significant degree clinically depressed inpatients from normals (Hathaway & McKinley, 1956b). Apparently Scale 2 is respectably stable; test-retest reliability is reported as .77 ± .044 (Hathaway & McKinley, 1956b).

MMPI Scale 2 consists of 60 items which are described elsewhere (e.g., Hathaway & McKinley, 1956b; Dahlstrom et al., 1972). Dahlstrom et al. (1972) note that the items which best differentiate clinically diagnosed depressed individuals from other groups are "I feel weak all over much of the time," r = .78; "I have a good appetite," r = .71; "My sleep is fitful and disturbed," r = .66; "I'm afraid of losing my mind," r = .66; and "My memory seems to be all right," r = .65.

Although Scale 2 was devised with data from a group of primarily psychotic inpatients, it has been

supported in the research "that the items reflected depressive mood changes on a neurotic basis" (Dahlstrom et al., 1972). The scale is reported to correlate .59 with an overall psychiatric rating of level of depression (Dahlstrom et al., 1972). This is essentially what Becker (1974) notes, that the MMPI Depression Scale does reasonably well for predicting mean score differences between nosological groups, but that it is less effective for detecting individual differences within groups. With all of its limitations, Scale 2 remains the most effective criterion-keyed "measure of the depth of the clinically recognized symptom or symptom complex of depression" (Horrocks, 1964, p. 546). Over the years variations and abbreviations of Scale 2 have been reported (e.g., Rosen, 1962; Dempsey, 1964; Wiggins, 1966), but at this point there is little evidence to show any advantages over Scale 2 in clinical practice (Dahlstrom et al., 1972).

Also important in detecting depressive neurosis is Scale 7 - Psychasthenia. The 48 items comprising this scale are described elsewhere (e.g., Hathaway & McKinley, 1956a; Dahlstrom et al., 1972), and relate to "anxiety symptoms, inability to resist, irrational fears, and self-devaluation. This scale is a general measure of anxiety and ruminative self-doubt. High scores tend to be obsessionally worried, tense, indecisive, and unable to concentrate" (Carson, 1969).

The importance of Scale 7 in detecting depression is its frequent elevation in combination with Scale 2. Dahlstrom et al. (1972) note that the 27 combination

> . . . is the most frequent high-point pair in hospitalized psychiatric groups, male and female, and is a predominant pattern among outpatient psychiatric cases. . . . The predominant feature of this group in presenting complaints is depression, with tenseness and nervousness as frequent components.

A modal diagnosis of reactive depression is given for the 27-72 pattern by numerous other investigators, including Hathaway and Meehl (1951), Rosen (1958), Silver and Sines (1961), and Donnelly and Murphy (1973).

In addition to the 27 combination providing an indicator of neurotic depression, both scales appear to be sensitive to changes in client functioning. In fact, along with Sc, Scales D and Pt provide consistent validity as indices of change (Bergin, 1971).

Shipley-Hartford Institute of Living Scale

The Shipley-Hartford Institute of Living Scale is a paper-and-pencil indicator of intellectual functioning. Developed by Shipley (1940), the scale was originally devised to measure intellectual deterioration due to organic brain dysfunction, but the test has been used by later researchers as an estimate of intellectual performance.

The Shipley contains 40 Vocabulary (synonym matching) items and 20 Abstract (problem solving) items. Reliability coefficients for the test are Vocabulary (.87), Abstract-Thinking (.89), and Full scale (.92) (Shipley, 1940). Shipley did not specify the type of reliability reported.

The Shipley has been found to be a reasonable estimate of intelligence, correlating .78 with the WAIS Full Scale I.Q. score (Paulson & Lin, 1967). This estimate is most accurate for average and higher I.Q.s; accuracy declines below Shipley raw scores < 36 (estimated WAIS Full Scale I.Q. = 92) as reported by Watson and Klett (1968).

Beck Depression Inventory

Another measure employed in this study was the Beck Depression Inventory (Beck, 1967, 1972; Beck et al., 1961). The BDI was developed as an indicator of the level of depression present in the patient. "The implicit rationale underlying severity of depression measures is that increased severity is associated with a higher frequency and greater intensity of depressive symptoms" (Becker, 1974). The scale purports to measure the various psychological, physiological, and behavioral manifestations of depression, and is said to be useful in the diagnosis, treatment, and research of depression (Beck, 1974a).

Becker (1974) notes respectable reliability data for the BDI, as indexed by internal consistency and stability criteria: Split-half Spearman-Brown corrected Pearson r is said to be .93. All items significantly related to the total score at the $p < .001$ level per item. And highly significant test-retest correlations are noted.

In terms of concurrent validity, Beck (1974a) cites several studies which report correlations of .62 to .73 between the BDI and psychiatrists' ratings of depth of depression. Beck et al. (1961) state the inventory also is sensitive to changes in the severity of depression over time intervals.

Becker (1974) agrees that the BDI is sensitive to change, and that validity and reliability are more thoroughly reported for the BDI than for any other depression scale. He concludes that the BDI "is probably the best developed and most widely used self-report depression measure" (Becker, 1974).

The Beck Depression Inventory has also been used as a screening device for depression (Beck & Beamesderfer, 1974), based upon the correlations of BDI scores with clinical ratings found by Beck et al. (1961). A suggested cutting score for clinical neurotic depression is BDI $\geq$ 17 (Beck, 1974d).

For purposes of this study the BDI was relabelled "BDI Questionnaire," and the factorial labels ("sadness," "pessimism," "sense of failure," etc.) above each cluster of items have been deleted. Additionally, each cluster of items has been numbered (1 through 21) and each item within a cluster has been lettered (a through f). Other than these minor changes in format, the instrument is that devised by Beck et al. (1961). The BDI Questionnaire is reproduced as Appendix A.

In this study the BDI will be entirely self-administered, in contrast to the standard instructions for the clinician-administration of the Beck Depression Inventory (Beck, 1975). Other investigators (e.g., Bosse et al., 1975) have used the Beck as a self-reported measure of depression, and claim this use to be valid.

Reinforcement Survey Schedule

The Reinforcement Survey Schedule (Cautela & Kastenbaum, 1967) is a paper-and-pencil instrument "designed to assess the relative reinforcement values of a variety of stimuli and stimulus situations" (Kleinknecht et al., 1973). The scale was developed to find possible reinforcers for use in operant conditioning strategies for shaping new responses (Cautela & Kastenbaum, 1967).

> The RSS is divided into four major sections. In the first three sections the respondent is asked to rate [60] items on a five point scale representing the degree to which the stimuli give joy or other pleasurable feelings. The extreme points of the scale are "not at all" and "very much." (Cautela & Kastenbaum, 1967, pp. 1116-1117)

RSS section I consists of 10 items, comprising 33 decisions or subitems, and pertaining to objects. Section II has 44 items--106 decisions--relating to covert stimuli. Section III contains 6 items describing social situations. In Section IV, the subject is asked to list what he does or thinks about frequently (from 5 to 20 times per day) (Cautela & Kastenbaum, 1967). The authors included Section IV so that Premack's Principle (1959) might be incorporated in shaping desired behavior:

> The Premack Differential Probability Hypothesis states that if two responses occur with different probabilities, the response with the highest probability can be used to reinforce the response with the lowest probability. . . . These responses may include thoughts, activities . . . , aggressive behavior, or derogatory remarks made to oneself. . . . This section [IV] can be particularly valuable in teaching the patient self-control responses, and also in establishing therapeutic activities which can occur in the absence of the researcher or therapist. (Cautela & Kastenbaum, 1967, pp. 1122-1123)

Additional applications of the Reinforcement Survey Schedule may be found in Cautela and Wisocki (1971).

Outpatient Depressive Behavior Rating Scale

A rating scale for measuring changes in overt client behavior was devised, based upon the NOSIE-30 (Honigfeld, Gillis, & Klett, 1966). The NOSIE-30 (Nurse's Observation Scale for Inpatient Evaluation) is a ward behavior rating scale which has been used extensively in V.A. and N.I.M.H. studies, particularly psychopharmacological research. Contributing to the instrument's "popularity are its: (a) brevity; (b) easily rated behavioral items; (c) evaluation of patient strengths and weaknesses; and (d) sensitivity to patient change" (Honigfeld, 1974).

The NOSIE-30 consists of 30 behaviors typically displayed by psychiatric inpatients. The behaviors are rated by observers according to their judged frequency of occurrence. The response categories are: (1) never, (2) occasionally, (3) sometimes, (4) often, and (5) always. Observers are asked to rate each behavior, based upon direct observations over the previous three days (Honigfeld et al., 1974).

For this study the NOSIE-30 was modified as the Outpatient Depressive Behavior Rating Scale (BRS). The response categories have been changed from judgments of the frequency of behaviors to counts of the observed frequency of behaviors. Raters were instructed to count each behavior, and to indicate its observed

frequency of occurrence for that day only. The frequency categories on the BRS are: (0) never, (1) once, (2) twice, (3) three times, and (4) four times or more.

Additionally the BRS was shortened in length from the NOSIE-30 based upon factorial analysis and visual inspection of the items. Honigfeld (1974) reports that 26 of the NOSIE-30 items cluster into six factors: social competence (COM); social interest (INT); personal neatness (NEA); irritability (IRR); manifest psychosis (PSY); and (psychomotor) retardation (RET). There is also a total assets (TOT) component sometimes scored.

The social interest and (psychomotor) retardation factors have apparent face validity for the assessment of "depressive" behavior changes. The factors each have respectable interrater reliability; INT = .95, RET = .83 (Lentz, Paul, & Calhoun, 1971). The five items making up INT and the three items comprising RET have formed the basis of the 12-item depressed outpatient client behavior scale devised by this investigator. The items appear on the new scale (Appendix B) as items 2, 4, 6, 7, and 9 (INT), and as items 3, 10, and 12 (RET).

The four items of the NOSIE-30 which Honigfeld does not report as loading heavily on any factor have been included on the new behavior rating scale, because

these items appear to this investigator to tap depressive behaviors. On the "behavior rating scale," these behaviors appear as items 1, 5, 8, and 11.

The behavior rating scale thus contains 12 specific and observable behaviors which describe the syndrome of depression defined earlier by Beck (1974a) and Seligman (1974b). The frequency counts should provide appropriate and valid data for a study of behavior change (Thoresen & Anton, 1974) of depressed individuals.

Procedures

Subjects

Potential subjects were referred to this investigator by staff persons of the community mental health center. Those potential subjects were new clients who were perceived by the staff members to manifest clinical neurotic depression (American Psychiatric Association, 1968). This investigator interviewed all potential subjects, and evaluated their psychiatric problem(s) based upon the increasingly specific diagnostic criteria described previously. These clinical and diagnostic procedures and criteria were:

> . . . intended to yield a sample of "pure" depressives, individuals in whom depression (state) is present to a clinically significant degree, constituting the major presenting psychopathology. (Lewinsohn, 1974)

Beck (1975) has quite accurately referred to individuals in this resulting sample population as primarily or predominantly depressed.

Psychodiagnostic Instruments

Based upon the clinical diagnostic procedures, all clients who appeared to be neurotically depressed were requested to take three of the psychodiagnostic instruments previously described. Clients were administered the MMPI prior to the therapeutic intervention phase. The answer sheets were visually skimmed before scoring to rule out gross response sets such as answering all items true, alternating true-false, etc. This procedure was essentially that used by Mezzich et al. (1974).

Following the scoring of protocols all MMPI profiles were visually inspected. Based upon other relevant studies described by DiMascio et al. (1968), Dahlstrom et al. (1972), Donnelly and Murphy (1973, 1974), and Leonard (1974), clients with MMPI profiles meeting the following criteria were included in the study: Highest scores on Scales 2 and 7, with T scores > 70; Scale 8 < Scale 7; and Scale 9 T score < 70.

The MMPI was also administered to all subjects following the termination of the treatment phase of this study.

The Shipley-Hartford Institute of Living Scale was administered to clients being considered for inclusion in this study, following the clinical diagnostic procedure. The Shipley protocols were scored according to the test manual (Boyle, 1967). Only clients whose Vocabulary raw scores were less than 5 greater than their Abstract raw scores were included in the study. A Vocabulary-Abstract difference > 5 is said to be an indicator of a deficit in abstract problem-solving ability due to psychotic thought disorder (Gasswint, 1971). Finally, WAIS Full Scale I.Q.s were estimated from the Shipley Total raw scores (Paulson & Lin, 1967). Only clients with I.Q.s $\geq$ 90 were included in the study.

Clients were administered the Beck Depression Inventory ("BDI Questionnaire") as a final psychodiagnostic screening instrument. Only clients with BDI total score $\geq$ 17 (Beck, 1974d) were involved in further study.

Eleven primarily neurotic depressed clients were included in the study, based upon the above clinical and psychometric diagnostic "cutting" procedures. None of the psychometric information used in the subject selection process was available to the therapist during the course of treatment.

All eleven subjects were administered the Reinforcement Survey Schedule prior to their inclusion in the treatment. The RSS was given at that time, so as not to have a confounding effect upon the treatment at some later date. The RSS was available to the therapist for use in identifying potential reinforcers for subjects during treatment.

Subjects were requested and required to complete a copy of the BDI Questionnaire every day during the course of the study. The BDI served as a repeated measure of subjects' self-reported level of depressive symptomatology.

Subjects also completed the BRS every day during the course of the study. The Behavior Rating Scale served as a repeated measure of client depressive behaviors.

Subjects were furnished copies of the BDI and the BRS, along with pre-dated, postal card-sized daily response sheets for both instruments (Appendix C). There were several methods for subjects to report their daily BRS and BDI responses to this investigator. The preferred method was for the investigator to telephone the subject each evening, and for the subject to verbally report the responses.

Unfortunately for the sake of experimental consistency, not all subjects had telephones or even

regular access to a telephone. In such cases subjects were instructed to fill out the response cards on a daily basis, and to return them to the mental health center upon their next appointment.

Client Behavior Raters

Subjects were requested to bring two "significant others" (spouse, co-workers, friends, adult family members, etc.) with them to the mental health center for a brief interview with this investigator. Subjects were asked to select individuals whom they saw frequently (approximately daily), and whose judgment the subject respected.

During the interview, the Behavior Rating Scale was explained to them, and each rater was asked to complete the scale at that time. Raters' questions about scale completion procedures were answered at that time, and the raters were requested to assist in the treatment of the client's depression by independently rating the client on the Behavior Rating Scale every day during the course of the client's treatment.

Finally, all raters were furnished additional copies of the scale and pre-dated, postal card-sized daily response sheets for the BRS (Appendix C).

At a specified time each day this investigator telephoned each rater to collect the data. It was predicted that telephone data collection procedures would

enhance reliability and completeness of data, and would serve as a regular social reinforcement for the daily rating of client depressive behaviors. When contacted by telephone, raters would report counts of observed behavioral frequencies verbally to the investigator. On those occasions when raters were not available by telephone, they were requested to mail or bring in their completed rating cards to the mental health center as soon as possible.

Although the nature of the treatment, and of the client's psychological problem(s) was not explained to them, they were given an explanation of the treatment approach, following the course of treatment. Additionally, the importance of their assistance was stressed and verbally reinforced.

Experimenters

Four experimenters were used in this study. Therapists were graduate students in the Department of Counseling, Personnel Services, and Educational Psychology, Michigan State University, who volunteered to assist in the study.

Therapists received training in cognitive-behavior modification during the month of April, 1974. This investigator was assisted in instructing the training sessions by a second doctoral student (now

an assistant professor of counseling) with extensive training and experience in rational-emotive, behavioral, and sexual therapy.

Therapists' training consisted of three two-hour sessions. The first of the training segments was a didactic presentation of the cognitive treatment of depression. Rational-emotive psychotherapy was summarized, and excerpts were played from various audio tapes made by Albert Ellis. Trainees had previously read A Guide to Rational Living (Ellis & Harper, 1961). Aaron Beck's treatment of depression was summarized, and they were furnished copies of the training manual developed by Beck and Rush (1974). Principles of behavior modification were not stressed, as all trainees had been experienced in using this treatment modality as part of their graduate training in counseling at Michigan State University.

The second training session began with a brief review of the first session and a discussion of the materials trainees had been furnished to study. Specific questions and concerns were responded to and problematic concepts were clarified. The treatment interventions which trainees would introduce during the study were then discussed (these interventions are delineated in the next section). When it was believed that all trainees understood what was expected of them

during each session of the treatment of depression, a role-playing session was staged. With trainees observing, the instructors played a depressed client and therapist, and the interventions of the depression treatment were modeled.

The final training session was a rational-emotive/cognitive group experience. The four trainees and two instructors assisted each other in identifying irrational and maladaptive assumptions underlying one emotion which the participant identified as currently problematic for himself.

Following the three training sessions, the instructors concurred that all four trainees possessed requisite theoretical understanding and adequate clinical skills to administer cognitive/behavioral techniques to the depressed subjects in this study. In addition to his involvement in their training, this investigator served as a consultant to therapists during the treatment phase of the study. Audio tapes and case notes from each treatment session were reviewed to assure that the therapist followed the treatment specifications and that quality control of treatment was maintained.

Because of the therapists' training in cognitive and behavioral treatments, they could not be assumed to be "blind" to the treatment package or philosophy, and by inference to the research hypotheses. However,

they did not have access during the course of treatment to the screening or treatment measures used to assess subjects' responses. Thus therapists were not double-blind, but they were data blind during the course of treatment.

Treatment Intervention

With any behavior modification technique, the intervention depends a great deal upon the specific problematic client behavior(s). With cognitive behavior modification,

> . . . the specific targets and techniques to be selected depend on the therapist' judgment. . . . It must be emphasized that the approaches must be tailored to the individual patient. . . . One or more cognitions or beliefs can be illuminated and addressed as a target. (Beck & Rush, 1974, p. 7)

It is thus a dilemma to define a treatment which is flexible enough to allow for generalization to other clients, yet specific enough to permit replicability and clear understanding. The following treatment package was devised to meet these criteria:

1. In the first treatment session, the therapist spent the first few minutes meeting the subject and establishing rapport. The therapist then introduced the cognitive-behavioral treatment of depression by furnishing the subject with a copy of the pamphlet, Coping with Depression, by Beck and Greenberg (1974) to serve as a client treatment manual. The subject

read through the booklet during the session, and therapist and subject discussed the reading. The therapist emphasized and elaborated upon the section "The A.B.C.s of Changing Feelings" (Beck & Greenberg, 1974, p. 12). Finally, the therapist suggested that the subject reread the booklet once each day, and whenever else the subject experienced feelings of depression, until the second treatment session.

2. During the second treatment session, the therapist assisted the subject in identifying at least five automatic and maladaptive depressive cognitions. The therapist instructed the subject in challenging each identified cognition. Therapists limited their verbal therapeutic interventions to the "Cognitive Targets Symptoms" delineated in Beck and Rush (1974, p. 9), and which have been reproduced as Appendix D. The therapist then assigned the subject to read the list of depressive cognitions and corresponding challenges before engaging in a high probability behavior, until the next session. The high probability behavior was selected by the therapist and the subject by reviewing the Reinforcement Survey Schedule previously completed by the subject. She was instructed to log the occurrence of reading the list of depressive cognitions and challenges, and to report this frequency to the therapist during the third session.

3. During the third session the therapist assisted the subject in generating a list of at least five positive self-evaluatory statements. The therapist instructed the subject to read through the list before engaging in a high probability behavior [such as lighting a cigarette (Seitz, 1971a)], until the next session. Therapist and subject selected a second high probability behavior from the RSS, and the subject again logged the frequency of reading the positive self-statements.

4. In the final session, the therapist reviewed with the subject the techniques of cognitive-behavior modification, and structured the termination of treatment contacts. The therapist also scheduled a followup session for two weeks after this fourth session.

Therapists thus saw each subject for four treatment sessions of one hour maximum length over a two-week period. Whenever possible during the treatment sessions, therapists reviewed and reinforced client progress, so that learning how to decrease depression was generalized and maximized.

Followup

Subjects were requested and required to complete the BDI questionnaire every day during the course of treatment and for two weeks following their completion of the treatment phase. At that time (two weeks later) they had a second interview with this investigator.

Their current level of psychological functioning was evaluated (clinically) and they were administered a second MMPI. Any concerns they may have had regarding their treatment were discussed, and they were offered further mental health services at the center if they desired. Three months following their completion of the treatment phase, subjects were requested to complete the BDI questionnaire and the MMPI.

Subjects and significant others were requested and encouraged to complete a behavioral rating for the client every day during the course of treatment and for two weeks following the completion of the treatment phase. At that time (two weeks later), the raters were contacted by this investigator. The depression treatment program was discussed with them, although specific details of the client's problem(s) and functioning were, of course, not divulged. Their assistance and cooperation with the clients' treatment and with the depression treatment program were again verbally reinforced. Three months following the client's treatment program, the significant others were requested to rate the client's current behavior.

Design

Intensive Case Study Design--Review

In recent years, much support has been generated for the application of single-case, or "intensive," designs to clinical research settings. Such designs have a long and respectable history in the physical and biological sciences, and recently have gained credibility in research in counseling and psychotherapy (Thoresen, 1972). Contrariwise, comparative group designs have drawn increasing criticism from applied researchers as being irrelevant or ineffective in use in counseling research:

> Typically, client change during treatment is obscured in group designs . . . and the relationship between change and treatment for individual clients may vary in fundamentally different ways compared to the average change of a group of subjects. . . . Exclusive concern with group means and variabilities impedes understanding of the treatment process, and may lead to erroneous generalizations about treatment effects. (Thoresen & Anton, 1972, p. 553)

Bergin (1971) likewise reviewed the criticisms of comparative group designs and offered the "experimental case-study approach" as a solution:

> It involves planning specific interventions with patients having specifiable disorders. Careful measurement is done of the presenting problem before, during, and after treatment, and an equally precise reading of the nature of the interventions is recorded. The course of change is thus thoroughly recorded and the responses to the intervention pinpointed. (p. 254)

This approach would appear to meet the need for measures described by Zytowski and Betz (1972), "which can follow the progress of the client in counseling, so that his improvement can be charted as a physician does that of his surgical patient" (p. 554). Bergin (1971) notes that the experimental case study approach meets the need for specificity in research, while not detracting from the complexities of clinical practice. The approach "nicely articulates a research strategy with the vicissitudes of clinical practice, and thus insures more prompt transfer of findings to practice than is usually the case" (p. 255).

Since Sidman published his classic works on operant techniques and design (1960, 1962), more and more behavioral researchers have found single case designs effective in the study of deviant behavior (Krasner, 1971). The single case approach would appear to be well-suited for the study of the cognitive-behavioral treatment of depression: (a) psychological correlates of depression can be adequately isolated (Beck, 1972); and (b) the effect(s) of specific treatment modalities may be systematically observed.

There is one more advantage of the single-case design in depression research. There is always the risk of suicide when dealing with depressed individuals, and there are ethical and even legal contraindications

for assigning potentially suicidal subjects to a control group (Kushner, 1974). In the single-case design each subject serves as his own control for events prior to the treatment intervention (Thoresen & Anton, 1974), and each subject may be involved in active treatment. The client's progress is plotted on a repeated measures basis, and the change in the slope of the data curve over time is the concern. "If the counselor can demonstrate comparable results with the same client each time a technique is used . . . , then confidence is increased that the counseling procedure is effective" (Thoresen & Anton, 1974, p. 556).

Thoresen (1972) and Thoresen and Anton (1972) review other advantages, applications, and variations of single-case designs. One design which is widely touted is the reversal, or "ABAB" design. Thoresen and Anton note that the design may be inappropriate "since the change in client behavior may not be reversible" . . . or "the problem behavior may be severe and should not be reinstated" (1974, p. 555). No clinician (nor client!) would wish to see depressive behavior reinstated, particularly with the risk of suicide. As an alternative, Thoresen and Anton (1974) propose the multiple-baseline design.

Hall et al. (1970) present an excellent description of multiple-baseline procedures, and illustrate

three design variants--across individuals, across behaviors, and across situations. Liberman and Smith (1972) have effectively applied the design to behavior therapy research. Mahoney and Thoresen (1974) describe the essential characteristics of the design:

> (1) Data must be kept on three or more behaviors (or individuals).
> (2) Treatment is applied to target behavior one until a change is shown in that behavior.
> (3) Then the intervention is applied to additional target behaviors.
> (4) If the target behaviors change substantially at the point of treatment intervention, then a causal relationship may be inferred.

Summary of Design and Procedures

In this study a multiple-baseline design was employed. Individual subjects' self-reported level of depressive symptomatology (BDI) and self- and other-reported behavior ratings (BRS) were charted every day on a repeated measures basis.

Subjects were divided into three groups, and each group began treatment at a varying time relative to the initiation of data collection. Specifically, Group I subjects began treatment 7 days following data collection, Group II subjects began treatment 10 days following data collection, and Group III subjects began treatment after 14 days.

To control for the effect(s) of attention by a counselor, Group II and III subjects were involved in

noncognitive, nonbehavioral, "placebo" counseling sessions during the seventh and the seventh and tenth days, respectively. These sessions consisted of client-centered, empathic counseling.

Data were collected for each subject during the 7, 10, or 14 days preceding treatment, for 14 days during the treatment phase, and for 14 days following treatment. There were four daily repeated measures plotted for each subject: his total score on the BDI Questionnaire and his mean scores on each of the three areas of the behavior rating scale (RET factor, INT factor, and "depression" items).

The treatment effects were contrasted across four behaviors and across eleven individuals at the same relative points in the treatment schedule.

Research Hypotheses

Beck makes two conclusions which follow from his theory and assumptions of the cognitive modification of depression. Beck's theory has tremendous potential for the understanding, treatment, and prevention of neurotic depression in humans. To this writer's knowledge, the conclusions per se have not been explicitly validated. Hypotheses of this proposed study are:

Conclusion 1:

By pinpointing the patient's specific cognitive distortions and demonstrating their invalidity through behavioral or cognitive techniques, the psychotherapist can achieve a rapid improvement in the symptoms of depression. (Beck, 1974c, p. 19)

Hypothesis 1:

Specifically for this study, it was hypothesized that there would be a reduction in the level of depression, as measured daily by the Beck Depression Inventory, immediately following the point of treatment intervention. This reduction in level of depression will be indicated by a reduction in the median slope trend.

Hypothesis 2:

The level of depression would increase during the two-week reversal phase following treatment. This increase in daily BDI scores will be indicated by an increase in the median slope trend.

Hypothesis 3:

Although it was predicted that the level of depression would rise during the reversal phase, it was hypothesized that due to generalization of learning, the BDI scores would remain lower than during the baseline phase, as indicated by a reduction in the median slope trends.

Conclusion 2:

Since each of the components of depression [behavioral, cognitive, emotional, motivational, or physiological] contribute to the other components, . . . an improvement in any one problem area [e.g., cognitive] would lead to an improvement in other areas [e.g., behavioral], which would finally spread to include the entire syndrome of depression. (Beck, 1974c, p. 3)

Hypothesis 4:

There would be a reduction in daily behavioral Depression item (BRS) scores immediately following the point of intervention, as indicated by a reduction in the median slope trend.

Hypothesis 5:

There would be an increase in daily behavioral Depression item (BRS) scores during the reversal phase, as indicated by an increase in the median slope trend.

Hypothesis 6:

During the reversal phase the daily behavioral Depression item (BRS) would remain lower than during the baseline phase, as indicated by a reduction in the median slope trend.

Hypothesis 7:

There would be a reduction in daily behavioral Psychomotor Retardation factor (BRS) scores immediately following the point of intervention, as indicated by a reduction in the median slope trend.

Hypothesis 8:

There would be an increase in daily behavioral Psychomotor Retardation factor (BRS) scores during the reversal phase, as indicated by a decrease in the median slope trend.

Hypothesis 9:

During the reversal phase the daily behavioral Psychomotor Retardation factor (BRS) scores would remain lower than during the baseline phase, as indicated by a reduction in the median slope trend.

Hypothesis 10:

There would be an increase in daily behavioral Social Interest factor (BRS) scores immediately following the point of intervention, as indicated by an increase in the median slope trend.

Hypothesis 11:

There would be a decrease in daily behavioral Social Interest factor (BRS) scores during the reversal phase, as indicated by a decrease in the median slope trend.

Hypothesis 12:

During the reversal phase the daily behavioral Social Interest factor (BRS) scores would remain higher than during the baseline phase, as indicated by an increase in the median slope trend.

Data Analysis

The data were analyzed by nonparametric trend analysis statistics (Siegel, 1956). These statistics gave tests for statistical significance of changes in the slope of data curves at the point(s) of treatment intervention(s). The statistical procedures involved have been described by Campbell (1963) and by White (1971, 1972).

According to the procedures outlined by White (1971), a slope for the data in each phase of the study for each subject was estimated. This estimated slope is known as the "median trend." In order to compare the data obtained during two phases, the median trend of one phase may be extended into the other phase of interest. According to probability theory, half of the data will fall on one side of the extended median trend, half on the other side, when the data in both phases are from the same larger population of data. With $p = .5$ that a bit of data will fall on a predicted side of the extended median trend line, a binomial formula, $P_x = \binom{N}{x} p^x q^{N-x}$, gives the probability for an observed number of data points, x, falling in the

experimentally undesirable direction of the median trend. If the binomial probability formula yields no statistically significant differences between data from two phases, then the phases cannot be said to be different in their effects upon the data (Siegel, 1956).

The data were analyzed across phase changes for each of the subjects, and it was ascertained whether there were statistically significant differences in the hypothesized directions.

Presented below is a discussion of each subject involved in this study. A brief description of the subject's presenting problems and depressive symptomatology will be followed by a summary of the subject's performance on each of the four daily measures of depression. Results of the statistical tests will be noted, as will whether the subject's data support or do not support each of the research hypotheses. Supplementary data for each subject will next be presented, and to finalize the discussion of each subject, the therapeutic outcome will be summarized.

To better summarize and organize the results of all subjects, a section will follow in which the performance of all subjects across all measures will be described. Certain supplementary findings from the data are then presented. The MMPI pre- and posttest results for all subjects are analyzed and the results

described. Also presented will be inter-rater reliability data obtained from the daily ratings on the Behavior Rating Scale.

CHAPTER III

RESULTS

Single Subject Results

Subject 1

Subject 1 is a 27-year-old female who has a six-year-old son, and who is attending a local community college. Subject 1 had felt depressed for "several years," and she has a history of suicidal gestures. She had drifted from one unsuccessful male-female relationship to the next, and in general was dissatisfied with her social life. She felt generally bored in life, and reported symptoms of depression including social withdrawal, crying easily, and feelings of worthlessness and hopelessness. Her speech was slow and unvarying in tone, and she had a sad expression on her face.

Subject 1's scores on the four daily measures of depression are shown in Figure 1. On the first dependent variable, the BDI scores, she stopped recording four days into the treatment condition, and was not responsive to requests by this investigator or by her therapist to complete the BDI on a daily basis. As

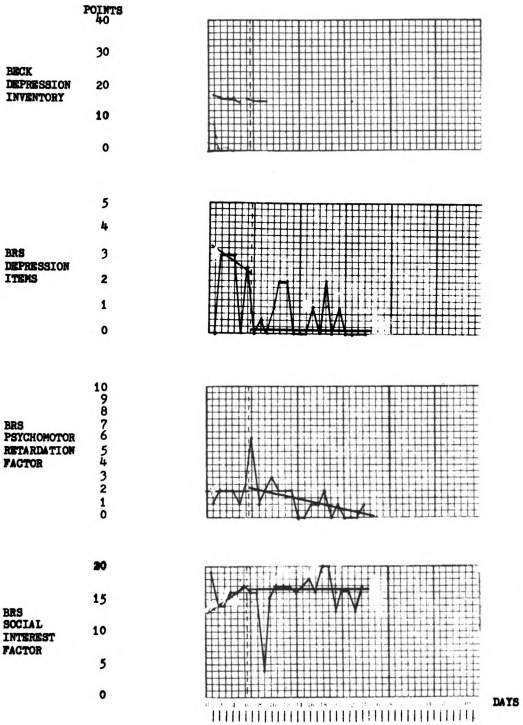


Figure 1. Subject 1; Daily scores on four dependent measures of depression.

may be seen, there was negligible improvement in her BDI scores, and statistical analysis of baseline-treated phase differences between the BDI median trends was not attempted (Table 1). Thus in the case of Subject 1, Hypotheses 1, 2, and 3 are untestable due to her failure to respond to the BDI.

The data for the three daily measures of behavior obtained from Subject 1's BRS scores are complete through the treatment phase. As may be seen in Figure 1, her daily scores on Depression items declined during the study, but this tendency began during the baseline phase. Changes between the median trends of the baseline and treatment phases were nonsignificant (Table 1), and Hypothesis 4 was therefore not supported. She did not return for her fourth treatment session, even though repeatedly contacted by this investigator, saying that she was too busy "working" and "moving to a new apartment." Because of her attrition from the study, there are no BRS data for the reversal phase, and Hypotheses 5 and 6 remain untested for Subject 1.

There was a reduction in her Psychomotor Retardation scores during treatment, and the decrease was statistically significant ($p=.001$). In this case Hypothesis 7 was supported at the $\alpha = .05$ level, but due to subject attrition, Hypotheses 8 and 9 were not tested.

Table 1

Binomial Tests of Phase Changes for Research Hypotheses Involving Beck Depression Inventory

Subject	Baseline-Treatment (H_1)	Treatment-Reversal (H_2)	Baseline-Reversal (H_3)
1	Incomplete Data	Incomplete Data	Incomplete Data
2	$\leq .001^a$	1.000	$\leq .001^a$
3	$\leq .001^a$	.994	$\leq .001^a$
4	1.000	$\leq .001^a$	1.000
5	.788	.967	.967
6	.971	1.000	$.006^a$
7	$\leq .001^a$	$\leq .001^a$	$\leq .001^a$
8	.500	$\leq .001^a$	$\leq .001^a$
9	$.019^a$	$\leq .001^a$	$\leq .001^a$
10	Incomplete Data	Incomplete Data	Incomplete Data
11	.855	.145	1.000
Across All Subjects	6 of 9 Significant	4 of 9 Significant	6 of 9 Significant

[a]Indicates statistical significance at $\alpha = .05$

Subject 1's scores on the Social Interest factor increased throughout the study, but there was an upward trend evident during the baseline phase. Consequently, median trend differences were nonsignificant, and Hypothesis 10 was not supported. Again due to incomplete data, Hypotheses 11 and 12 were not tested.

As a piece of supplementary data, her MMPI pretest profile is included as Figure 2. This profile is typical of the pretest profiles of subjects in this study. It may be seen that there are peaks on Scales 2, 7, and 0. This pattern would be expected for depressed, anxious, and socially withdrawn and introverted individuals. The moderate elevation on Scale 4 and the depression on Scale 5 are indicative of social dissatisfaction and a tendency to respond interpersonally in a passive-dependent fashion. As was mentioned previously, she did not return for her final counseling sessions; thus MMPI posttest data are not available.

Subject 2

Subject 2 is a 33-year-old married woman with three children. She is a high school graduate, and is a homemaker. Her husband is a skilled tradesman. She was referred to the mental health center by her gynecologist for "nerves and depression." Subject 2 stated that she had been crying a great deal, and that she became anxious and shook uncontrollably. She felt inadequate

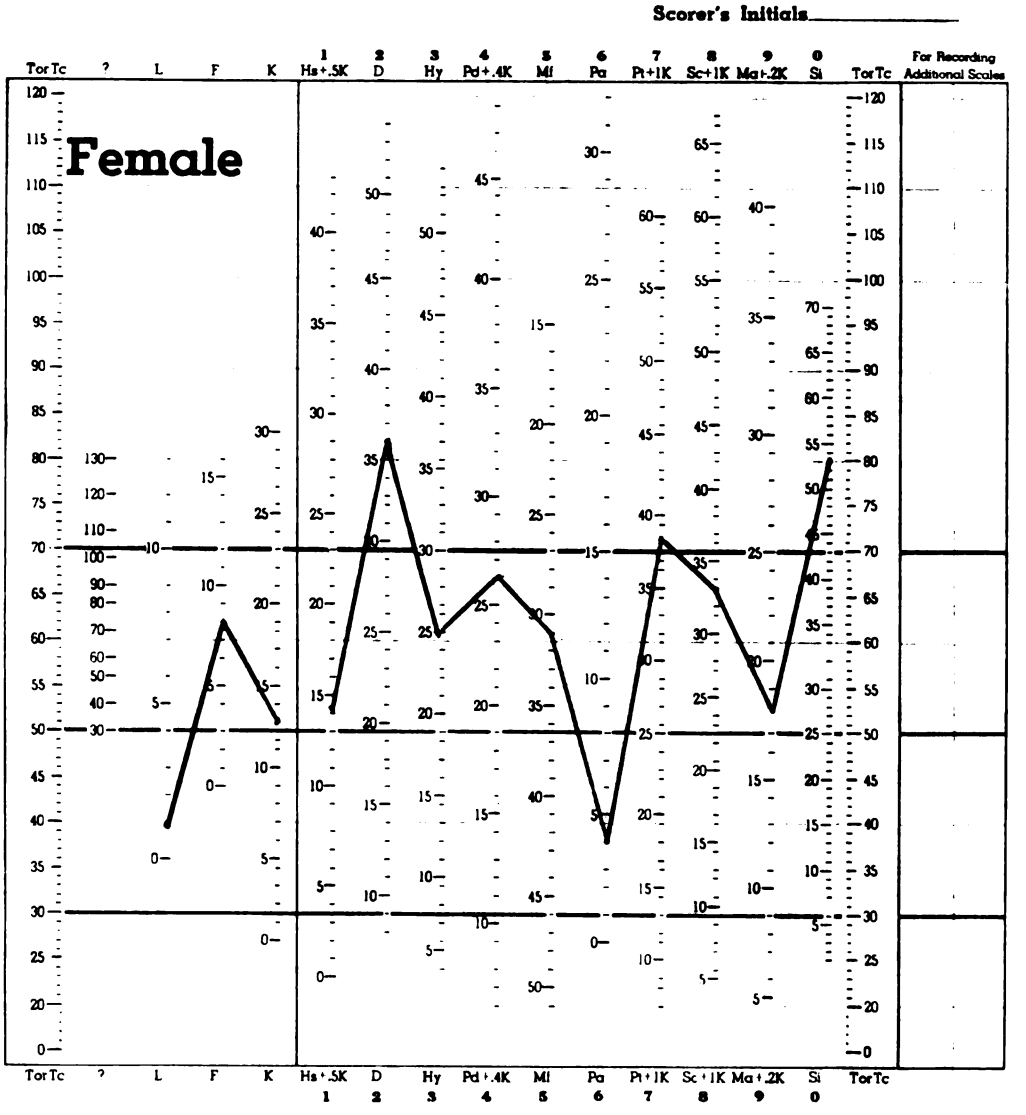


Figure 2. Subject 1; MMPI pretreatment profile.

as a mother and imperfect as a wife. She was extremely sensitive to the criticism of others, and she felt like a failure. Her sleep pattern was disturbed--she awakened frequently, could not get a full night's sleep, woke up tired, and slept much during the day. She had felt depressed for three to four years, and had considered committing suicide.

Subject 2's daily performance on the four dependent measures of this study are presented as Figure 3. As may be seen in the graph for the BDI, there was an abrupt decrease in her self-reported level of depression just after the point of intervention. This decrease in the median trend is statistically significant (Table 1), supporting Hypothesis 1. There was not the predicted upswing in BDI scores during the reversal phase. Treatment and reversal phases had median trends which were not significantly different, and Hypothesis 2 was not supported. The lower median trend in the reversal phase than during baseline is, however, statistically significant, and Hypothesis 3 is thus supported. Overall, Subject 2's scores on the BDI dropped appreciably after treatment began, and continued to decline over the period of the study.

Her performance on the three measures derived from daily BRS ratings supports none of the Hypotheses 4-12. It may be observed that she "improved" during the

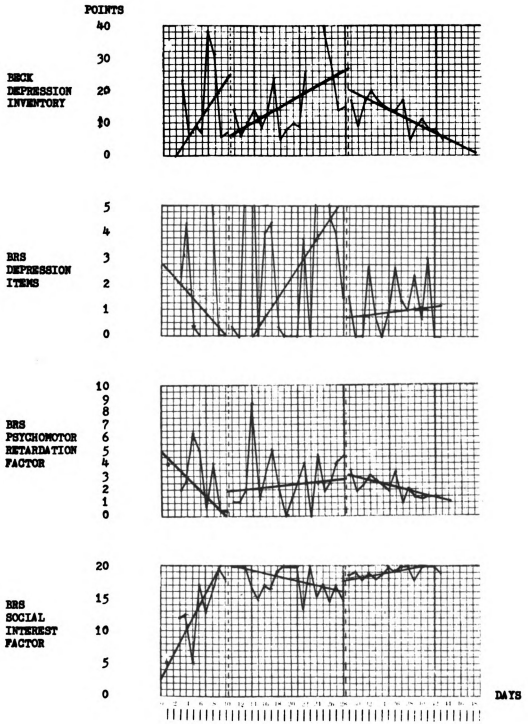


Figure 3. Subject 2; Daily scores on four dependent measures of depression.

study--her scores on the Depression items decreased, as did the scores on Psychomotor Retardation, but Social Interest scores increased. However, in each of the baseline phases for the three measures, median trends are toward the desirable direction, and there were no statistically significant differences between baseline and treatment phases (Tables 2-4). Nor were there statistically significant differences between the median trends of the treatment and reversal phases. Thus, although Subject 2's behavioral rating scores became more desirable as the study progressed, they were heading in this direction even during the baseline condition, and positive changes cannot be said to be due to the treatment.

Subject 2's MMPI pre- and posttest profiles are presented as Figure 4. It may be seen that there were drops of at least one standard deviation in her scores on scales 2, 4, 6, 7, 8, and 0, and that her posttest profile is well within normal limits.

Following completion of her treatment, Subject 2 felt happy--as she described it, "better than I've felt in years." She felt more at ease with her husband and with her children. Her crying had ceased, and she was no longer sleeping during the day. She desired no further counseling at the end of treatment, because she wanted to see how she would do with her depression on her own.

Table 2

Binomial Tests of Phase Changes for Research Hypotheses Involving Behavior Rating Scale Depression Items

Subject	Baseline-Treatment (H_4)	Treatment-Reversal (H_5)	Baseline-Reversal (H_6)
1	.593	Incomplete Data	Incomplete Data
2	1.000	1.000	1.000
3	$\leq .001^a$	.685	$\leq .001^a$
4	1.000	$\leq .001^a$	1.000
5	.971	$\leq .001^a$	1.000
6	1.000	.994	1.000
7	$\leq .001^a$	$\leq .001^a$	$.033^a$
8	1.000	$\leq .001^a$	1.000
9	$.019^a$	1.000	$\leq .001^a$
10	Incomplete Data	Incomplete Data	Incomplete Data
11	1.000	1.000	1.000
Across All Subjects	3 of 10 Significant	4 of 9 Significant	3 of 9 Significant

[a]Indicates statistical significance at $\alpha = .05$

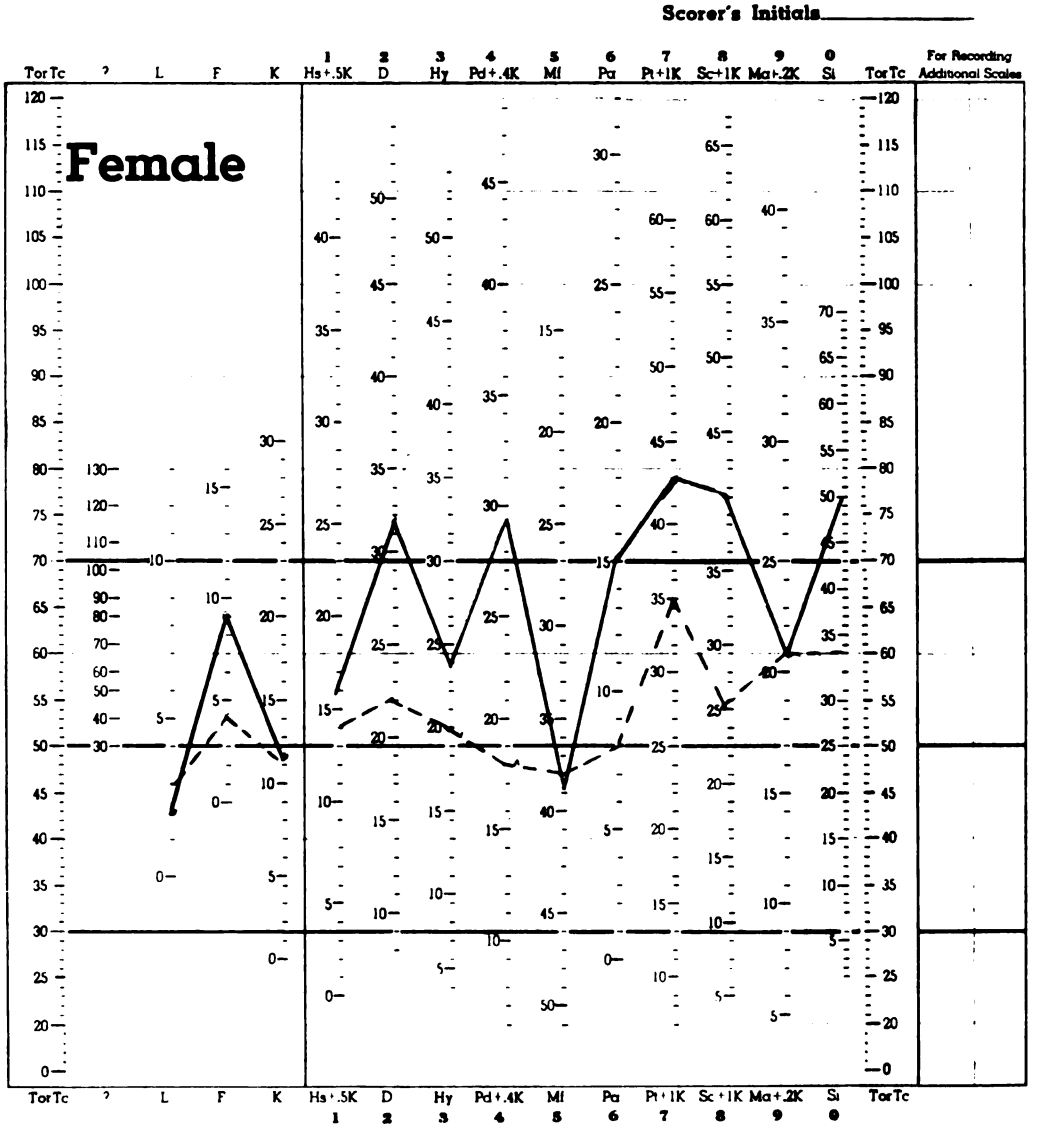


Figure 4. Subject 2; MMPI pre- and posttreatment profiles.

Subject 3

Subject 3 is a 28-year-old married woman with children. She complained of nervousness and depression, crying easily, irritability, and being easily confused. She had considered suicide, had withdrawn socially, and appeared disheveled and unkempt. She was dissatisfied about her marriage to a man who was alcoholic, and who was irresponsible with the family finances.

Subject 3's performance on the four dependent variables is shown as Figure 5. She showed a statistically significant (Table 1) reduction in her BDI scores at the point of treatment intervention, supporting Hypothesis 1. The data in the reversal phase did not increase as hypothesized (Hypothesis 2), but the reversal phase median trend was lower than during baseline phase ($p < .001$), supporting Hypothesis 3.

Her scores on the BRS Depression items dropped significantly (Table 2) during the treatment phase. There was not a significant difference between the treatment and reversal phases, but the reversal phase scores remained lower than during baseline. For this subject, then, Hypotheses 4 and 6 are supported, but Hypothesis 5 is not supported by the data.

Subject 3's scores on the Psychomotor Retardation factor show a similar pattern. A significant reduction of the median trend during the treatment phase (Table 3)

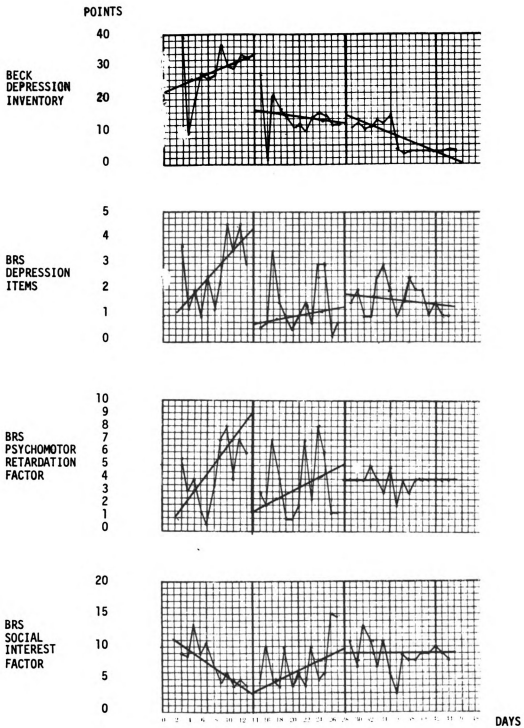


Figure 5. Subject 3; Daily scores on four dependent measures of depression.

($p < .001$), is followed in the reversal phase by a median trend which did not increase ($p = 1.000$), but which remained lower than during the baseline phase ($p < .001$). Thus, the Psychomotor Retardation data support Hypotheses 7 and 9 but do not support Hypothesis 8 for this subject.

On the Social Interest factor of the BRS, Subject 3's scores increased significantly (Table 4) ($p < .001$) during the treatment phase. There was a decline in the median trend during the reversal phase ($p = .001$), but the reversal median trend remained higher than during baseline ($p < .001$). The data for the Social Interest factor for her support Hypotheses 10, 11, and 12.

As indicated by her MMPI profiles (Figure 6), Subject 3 showed only slight improvement between pre- and posttest scores. The scales of interest, 2 and 7, decreased .5 and 1 standard deviations, respectively. Overall, there was no appreciable change in her "personality" functioning, as indicated by her MMPI profile.

Subject 3's MMPI posttest profile was discussed with her during her session following the reversal condition. Because of probable remaining problems in the areas of depression (Scale 2), anxiety (Scale 7), marital and interpersonal relationships (Scales 4, 5, and 6), and with her social functioning (Scale 0), I urged her

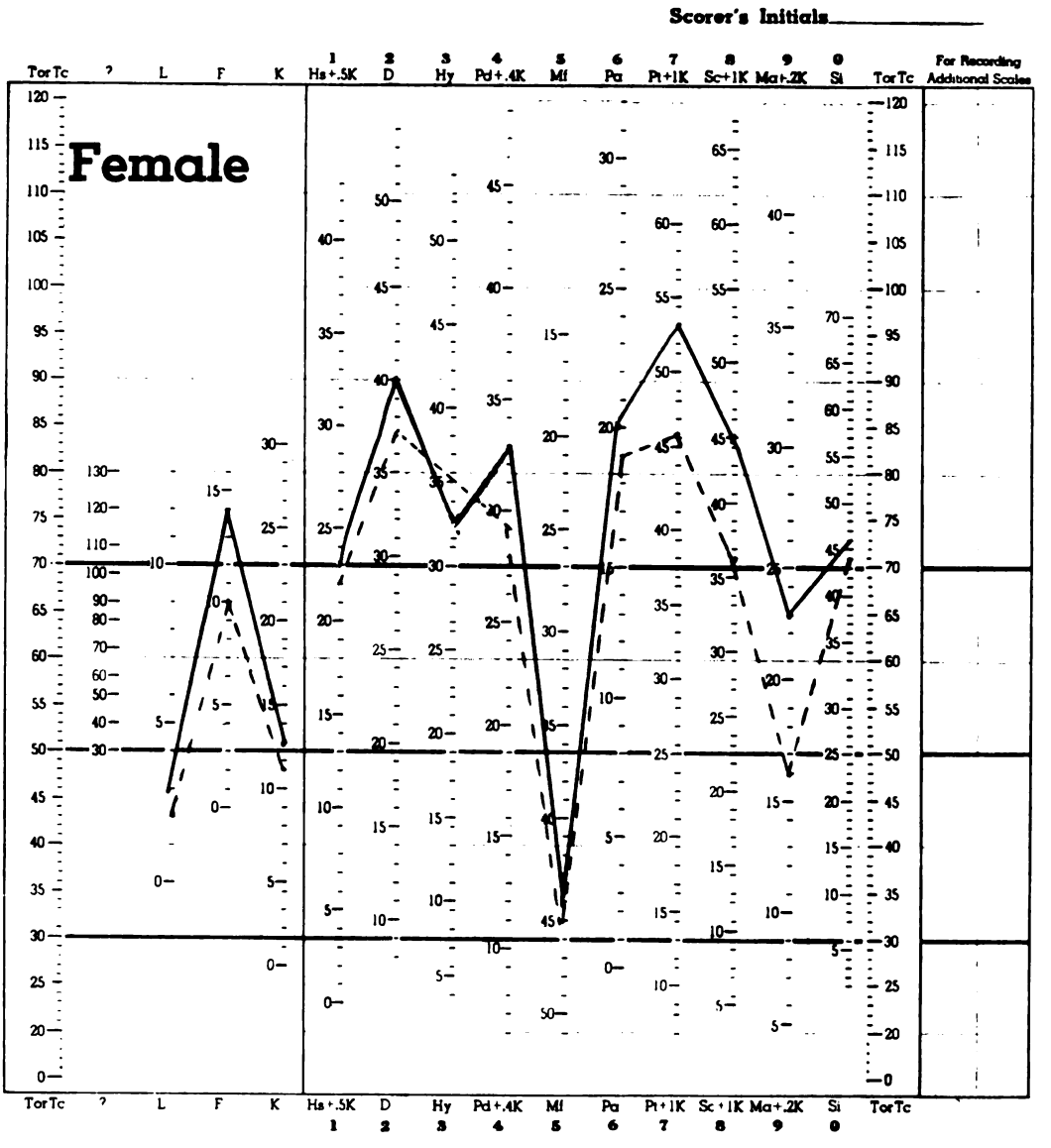


Figure 6. Subject 3; MMPI pre- and posttreatment profiles.

to continue coming for counseling at the mental health center. Such counseling might have included group assertion training and conjoint marital therapy.

Subject 3 declined the invitation for future counseling. She claimed that she felt less depressed, and that she had just obtained employment as a check-out clerk in a department store. She promised that she would return for further counseling if she needed it in the future, but that she was satisfied with her present psychological state of affairs.

Subject 4

Subject 4 is a 53-year-old female who claimed to have been depressed "off and on" for as long as she could remember. She is married, and lives with her husband on their farm. She has children who are married, and who live with their families near the farm place. Subject 4 was hospitalized recently when there was a financial setback on the farm, and she saw "everything we'd ever worked for go up in smoke." She felt exhausted, hopeless, disappointed, and frustrated. She could no longer motivate herself to do housework. Her speech was slow, and she appeared to be sad. Her sleep was fitful--"I wake up in a cold sweat every morning"-- and her appetite was poor. She and her husband were experiencing marital difficulties, and she was isolating herself from friends.

Subject 4's performance on the four daily measures is included as Figure 7. It can be seen that her scores on the Beck Depression Inventory dropped overall, although the median trend was downward even during baseline. Differences between median trends occurred only over one phase change (Table 1). Thus, Hypothesis 2 is supported by the BDI data, but Hypotheses 1 and 3 are not supported. The reduction of level of depression cannot be said to be due to the treatment intervention.

Similar results may be observed on her scores on the BRS Depression items (Figure 7). Overall her scores decreased, but there was also a decreasing median trend during the baseline. The phase changes between baseline and treatment, and baseline and reversal are nonsignificant (Table 2), failing to support Hypotheses 4 and 6. Only Hypothesis 5 is supported.

Subject 4's BRS Psychomotor Retardation scores also showed a declining median trend during the baseline. The phase change into the treatment phase was not statistically significant (Table 3), nor was this phase significantly different than reversal. Thus, Hypotheses 7 and 9 were not supported. Only the difference between the median trends of treatment and reversal phases was statistically significant ($p < .001$), supporting Hypothesis 8.

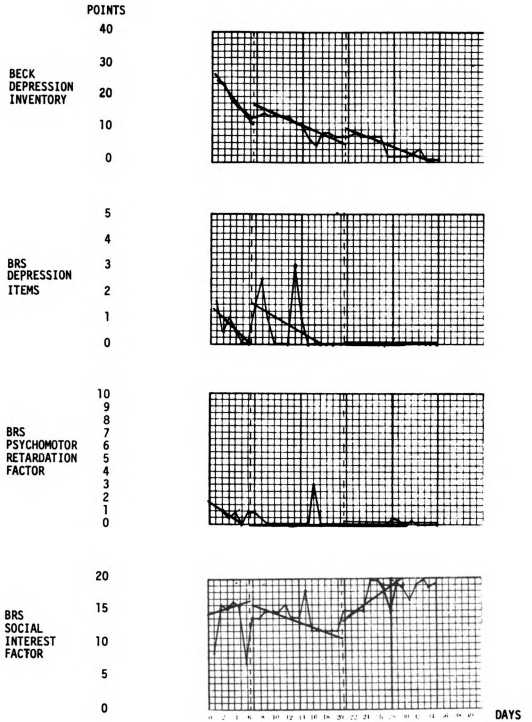


Figure 7. Subject 4; Daily scores on four dependent measures of depression.

None of the phase changes on the Social Interest factor were statistically significant (Table 4) in the predicted direction, failing to support Hypotheses 10, 11, or 12.

Subject 4's pre- and posttest MMPI profiles are shown as Figure 8. There were marked reductions in scores on Scales 2 and 7, the clinical scales of interest to this study. Scale 4 remained elevated, although reduced, indicating social/marital discontent. Scale 0, Social Introversion, was appreciably reduced.

Following termination of treatment, she reported a lessening of her depression. She felt happy and more self-confident, and appeared calmer and more composed. Her marriage seemed improved, and she wondered to what extent this was due to changes in her perceptions. She was not desirous of further personal, marital, or group counseling, stating that she wanted to try out her newly learned anti-depression strategies.

Subject 5

Subject 5 is a 22-year-old mother of three children who was referred to the mental health center by her family physician. She had been depressed for as long as she could remember, and was hypersensitive, irritable, and nervous. She felt like crying much of the time, but she found it difficult for the tears to flow. She had a poor appetite, and she wanted to sleep

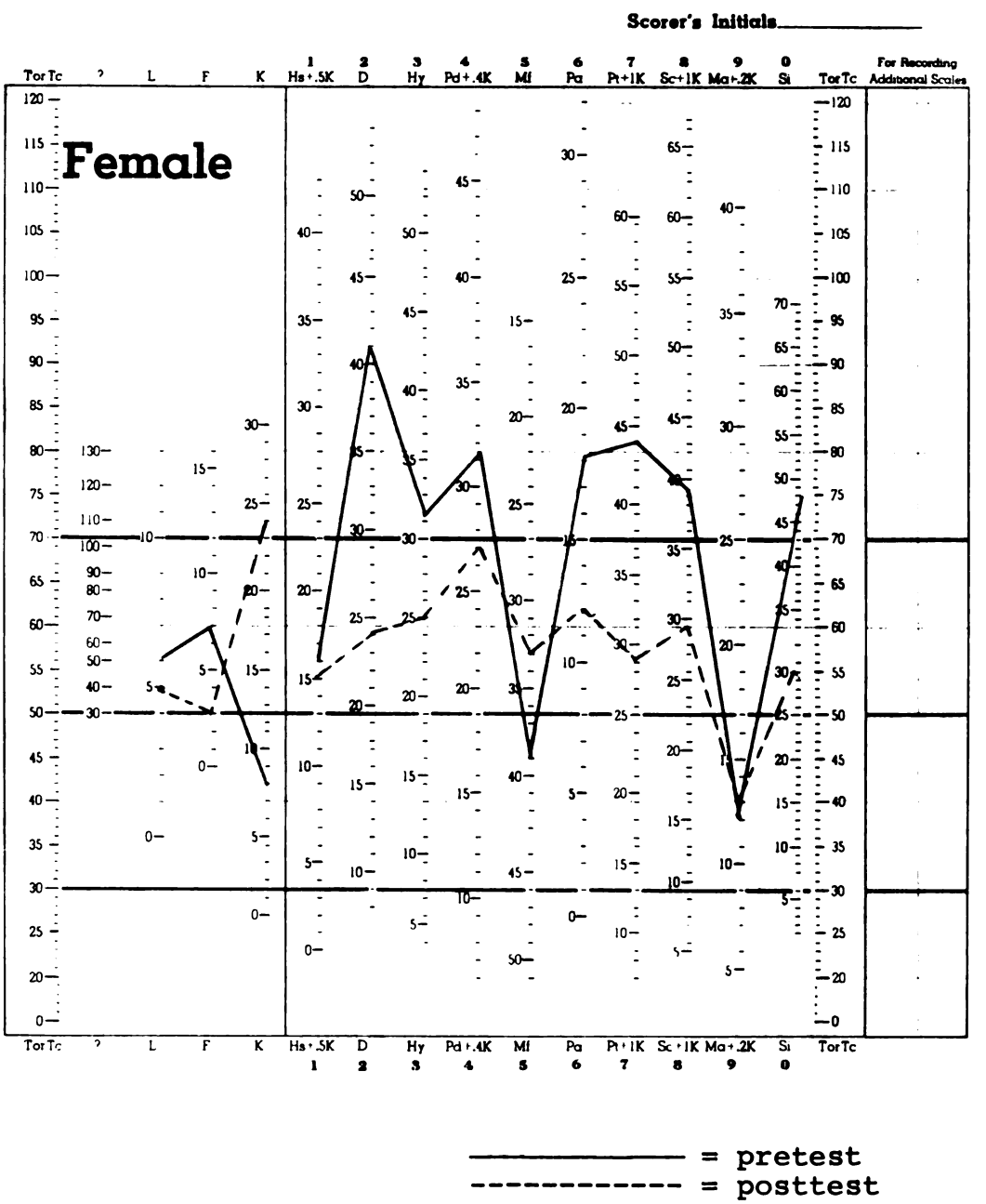


Figure 8. Subject 4; MMPI pre- and posttreatment profiles.

through much of the day. At night she had nightmares of "frightening" and "morbid" subjects. The subject had socially isolated herself, and thought she was having a "mental breakdown." She had an extremely poor and inaccurate self-concept, thinking she was stupid, ugly, and totally unlovable. In addition to her depressive symptomatology, she was troubled by her marriage. Her major complaints were unsatisfactory communications, nonorgasmic sex, and her husband's over-drinking.

Subject 5 entered willingly into the depression treatment study. As may be seen in Figure 9, her scores on the BDI decreased over time. There was a downward median trend across all phases of the study. There were no changes in phases which were statistically significant (Table 1), so the reduction in depression level may not be inferred to be caused by the intervention. Hypotheses 1, 2, and 3 are thus not supported in this case.

Subject 5 showed a reduction in her BRS Depression items scores. During the baseline phase there was a downward median trend, so the difference between baseline and treatment is nonsignificant. The median trend of the reversal phase was in the desired direction, and the difference between this phase and treatment was statistically significant (Table 2). The difference between the median trends of the baseline and reversal

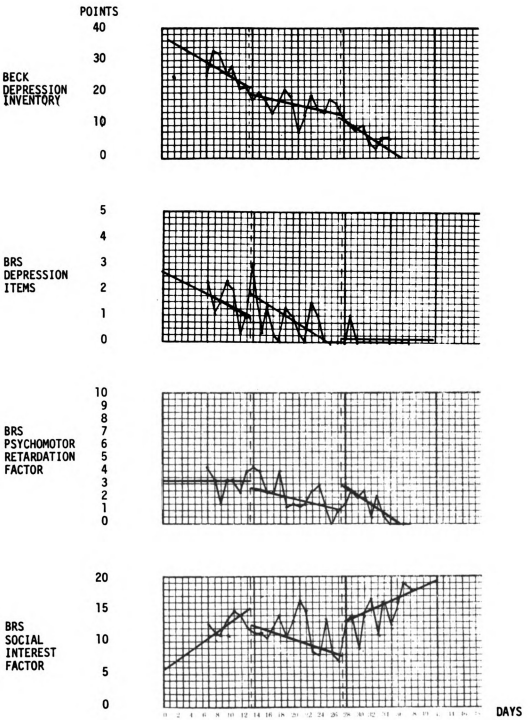


Figure 9. Subject 5; Daily scores on four dependent measures of depression.

phases was nonsignificant, however. Thus, Hypothesis 5 is supported, but the data fail to support Hypotheses 4 and 6.

On the Psychomotor Retardation factor her median trend for the treatment phase was lower than for the baseline, and the difference was statistically significant (Table 3). Likewise there was a statistically significant difference between treatment and reversal data, and between baseline and reversal conditions. For the Psychomotor Retardation performance, Hypotheses 7, 8, and 9 were supported.

Because her scores on the BRS Social Interest factor were increasing during the baseline phase, none of the differences between median trends are statistically significant in the desired direction. Thus, although her scores increased across time, the data do not support Hypotheses 10, 11, and 12, and the data cannot be said to be due to the treatment.

Figure 10 is a presentation of pre- and posttest MMPI profiles for Subject 5. It may be seen that there were large reductions on Scales 2 and 7. Although the posttest profile is within normal limits, some depression and anxiety remain, as do social and marital maladjustments and social introversion.

At the end of the reversal phase, she felt some lifting of her depression. She was still unsure of

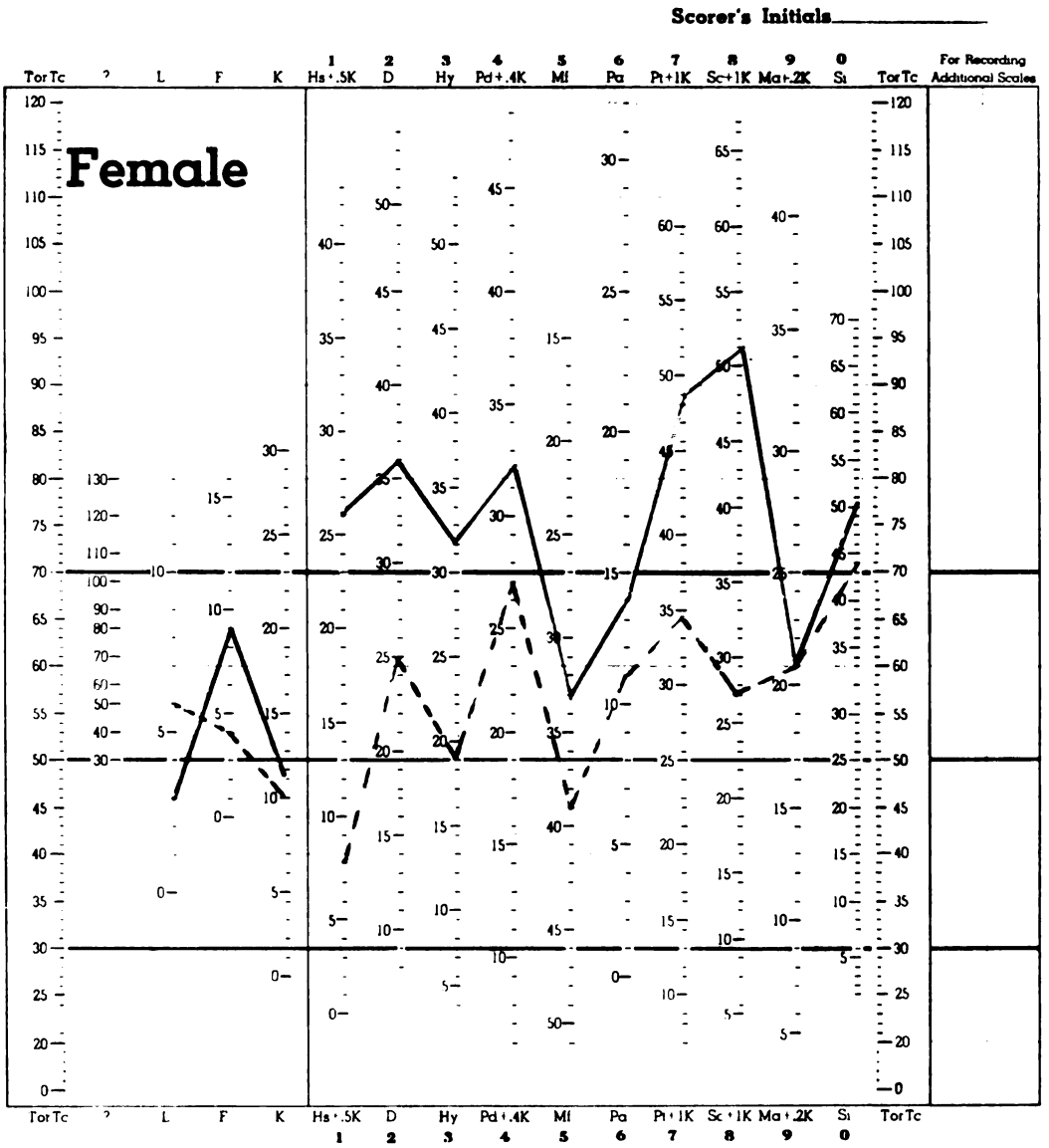


Figure 10. Subject 5; MMPI pre- and posttreatment profiles.

herself, and elected to remain in counseling. She has been receiving individual rational-emotive therapy, and recently her husband came in for conjoint marital therapy. The subject is also involved in an assertion-training group.

Subject 6

Subject 6 is a 25-year-old female who is married and has two children. She was referred by her family physician for anxiety. She was easily upset, expressed difficulty in coping with her children, had been crying easily, and had a very poor self-image. She had a poor appetite, and had lost 15 pounds during the past year. She felt as though she should be punished, and had thought about killing herself. The subject had withdrawn socially, and her motivation for successful treatment had been questioned by the referring therapist.

Her performance on the four daily measures of depression is presented as Figure 11. It may be observed that over time her scores on the BDI decreased slightly. There was no statistically significant difference between the median trends of the baseline and treatment phases (Table 1), and thus Hypothesis 1 is not supported. There was a decrease in the median trend of the reversal phase as compared to the treatment phase, failing to support Hypothesis 2. There was overall a

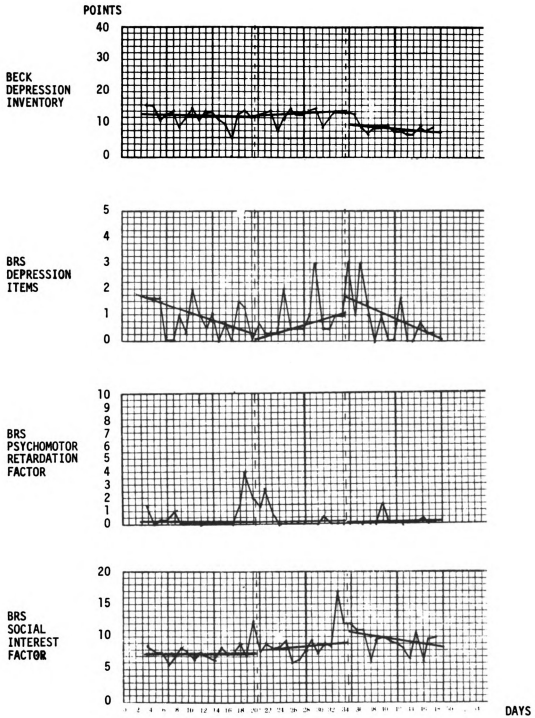


Figure 11. Subject 6; Daily scores on four dependent measures of depression.

decrease in the median trend from the baseline to the treatment phase ($p = .006$). Thus, from the BDI data, only Hypothesis 3 is supported.

None of the between-phase differences of median trends for the BRS Depression items were statistically significant in the desired direction (Table 2). As may be observed in Figure 11, there was a decline in the median trend during the baseline phase, an upturn during treatment, and a second decline during reversal. All of these changes were contrary to the hypothesized changes. Thus, from the BRS Depression item scores, none of Hypotheses 4, 5, and 6 may be supported.

Subject 6 showed little Psychomotor Retardation during the baseline phase, and there was no statistically significant difference (Table 3) between her baseline and treatment performance. There was a slight drop in her median trend during the reversal phase, which was not statistically significantly different from the median trend of the treatment phase data. Overall there was a slight reduction in Psychomotor Retardation between the baseline and reversal phases; and this decrease was statistically different ($p = .029$). For this factor the data fail to support Hypotheses 7 and 8, but support Hypothesis 9.

The BRS Social Interest factor performance increased during the treatment phase, and the resulting

median trend (Figure 11) was significantly higher statistically than the trend for the baseline phase ($p = .029$) (Table 4). There was no statistically significant reduction of the data during the reversal phase as compared to the treatment phase. The data from the reversal phase remain higher than the median trend of the baseline phase ($p = .029$). Subject 6's performance on the BRS Social Interest factor fails to support Hypothesis 11, but support Hypotheses 10 and 12.

Her pre- and posttest profiles from the MMPI are presented as Figure 12. An overall reduction in the clinical scale scores may be observed, although the profile configuration remains relatively intact. At the time of posttesting, peaks on Scales 2, 7, and 0 remain, with a depression on Scale 5. Like Subject 1, this profile indicates a mildly depressed and anxious individual who is socially introverted, and who is passive and dependent on others.

Following the two-week reversal phase she was interviewed by this investigator. She desired further counseling, and treatment alternatives were discussed. For two months, she was involved in individual RET-based counseling, and presently is attending weekly group assertion training sessions at the mental health center. She continues to be easily irritated by her children, and she is plagued by frequent neck aches. She says

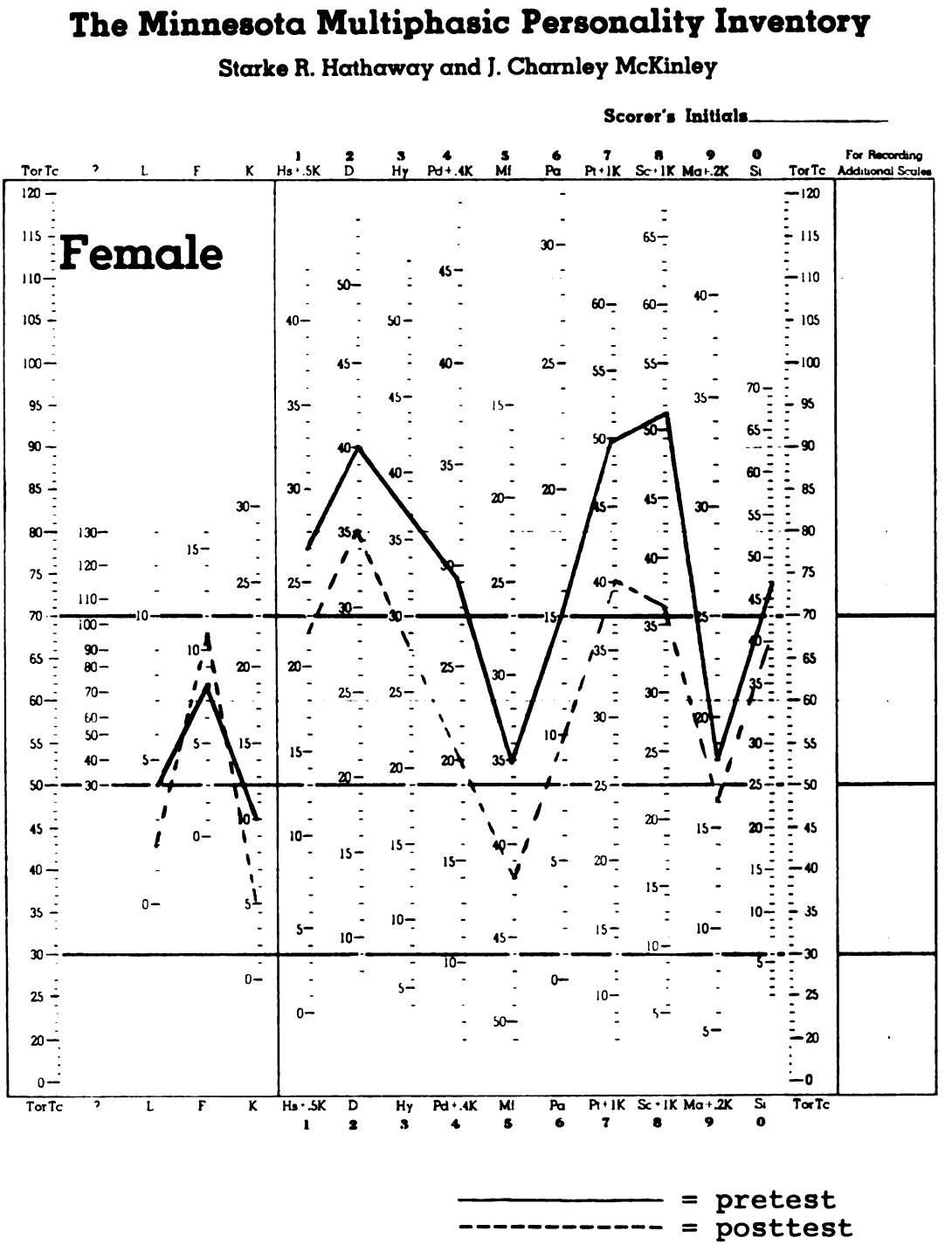


Figure 12. Subject 6; MMPI pre- and posttreatment profiles.

she feels better when she remembers "the ABC's of changing feelings," but she really doesn't work at it very hard. She remains extremely dependent upon her family doctor and her mental health therapists to solve her emotional problems.

Subject 7

Subject 7 is a 36-year-old married woman with three children. She and her husband originally were referred to the mental health center by a friend because of marital problems. It soon became evident to the therapist that some of the marital difficulties were due to her depression, and she was referred for screening into this study. She had been depressed for at least three years. She was very critical of herself in terms of her physical appearance, her intelligence, her housekeeping, her maternal abilities, and her adequacy as a wife. She cried easily, slept much of the day, and felt nervous and irritable. She had lost interest in sex, and she had been thinking of killing herself. It was decided by the couple and by their therapist that upon her completion of the study, conjoint marital therapy would be reinstituted.

The subject's performance on the four dependent variables is shown as Figure 13. During the baseline phase, her scores on the Beck Depression Inventory were high, and although there are some data missing, it may

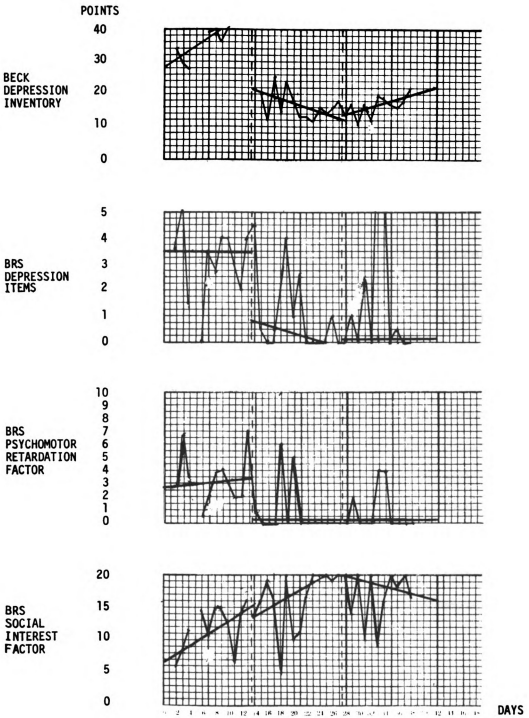


Figure 13. Subject 7; Daily scores on four dependent measures of depression.

be noted that the median trend is upward. During the treatment phase the BDI scores decreased and the median trend reversed in the desirable (downward) direction. The between-phase difference was statistically significant ($p < .001$) (Table 1). During the reversal phase the median trend was upward, and this difference was statistically significant (also at $p < .001$). The comparison between baseline and reversal phase median trends was statistically significant in the desirable direction; Subject 7's self-reported level of depression lowered as time progressed. Thus, the BDI data support research Hypotheses 1, 2, and 3.

As may be seen in Table 2, all changes between phases for the median trends of the BRS Depression item scores were statistically significant in the desired directions. A relatively horizontal median trend during the baseline phase turned downward during the treatment phase ($p = .001$), and leveled off during the reversal phase, a change which was also statistically significant. Her BRS Depression item performance is thus supportive of Hypotheses 4, 5, and 6.

The BRS Psychomotor Retardation factor performance yielded an upward median trend during the baseline phase. This trend dropped and became horizontal during treatment, a change which was statistically significant (Table 3); the data thus support Hypothesis 7. The

low (almost zero) and horizontal median trend continues into the reversal phase. The data do not indicate a change in performance between treatment and reversal conditions, and thus Hypothesis 8 is not supported. Comparing baseline and reversal conditions, there was a statistically significant difference ($p < .001$) in the desired direction (Table 3). Thus, her scores on the BRS Psychomotor Retardation factor decreased as compared to the baseline period, and Hypothesis 9 is supported.

Looking at the Social Interest factor (Figure 13), there was an increasing median trend for the data during the baseline condition. A similar trend continued into the treatment phase, and the data during the two phases are statistically not significantly different (Table 4). There was a decreasing median trend, as predicted, during the reversal phase, and the difference between the treatment and reversal phases is thus statistically significant ($p < .001$). Her performance during the reversal phase was not higher to a statistically significant degree than the baseline performance; overall, her Social Interest cannot be said to have increased. Thus, for this BRS factor, Subject 7's performance supports Hypothesis 11, but fails to support Hypotheses 10 or 12.

An overall reduction in MMPI scores is indicated in Figure 14. Her scores on Scales 2 and 7 considerably decreased during the course of this study. Elevations remain on Scales 4, 7, and 0, and there remains the depression on Scale 5. The posttest MMPI profile is indicative of an individual with mild anxiety and social introversion and feelings of inadequacy. Marital and/or social dissatisfactions remain, as does a tendency to be overly dependent and submissive.

Following her treatment for depression, she reported feeling much less depressed. Her crying had ceased, she felt somewhat more confident around others, she was less lethargic, and she felt more in control in her home and with her children. Social and marital concerns still plague her. She and her husband were involved in conjoint marital therapy with male and female co-therapists. Therapy emphasized development of better communications skills, and clarifications of each partner's values in their marriage. Two months of such marital counseling were relatively fruitless, and were frustrating to the couple and to the therapists. It was perceived that she was dishonest in her marital communications, and that she really wanted out of the marriage. The couple terminated from marriage counseling, and soon thereafter Subject 7 separated from her husband.

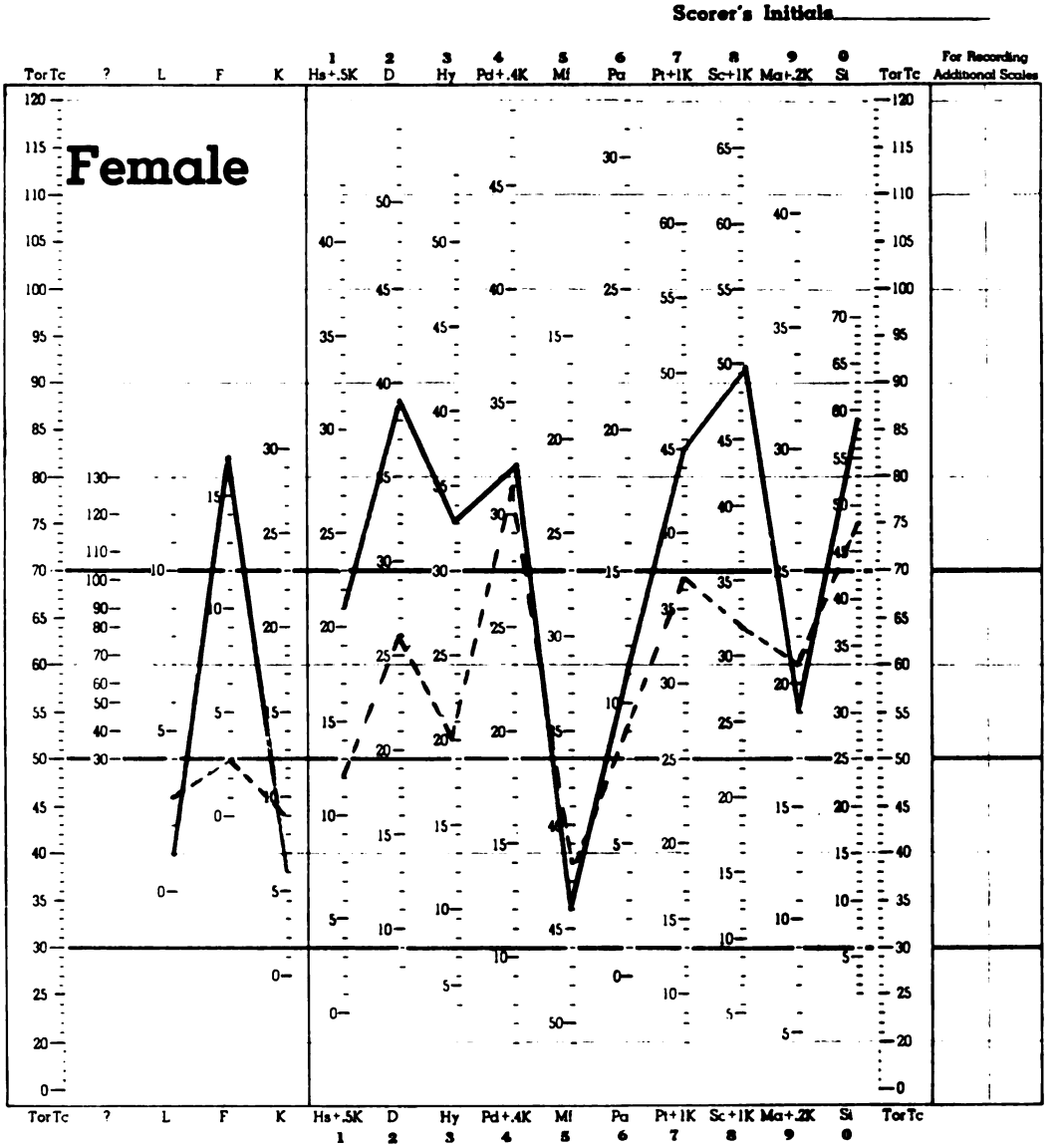


Figure 14. Subject 7; MMPI pre- and posttreatment profiles.

Subject 8

Subject 8 is a 39-year-old female who was referred by her family physician. He described her history of nervousness, depression, and psychosomatic problems such as colitis. The physician said that she was one of his more enjoyable patients--bright, verbal, and articulate. She had become increasingly nervous, depressed, and confused. She had been crying easily, and had begun drinking in the afternoons to "relax." She was confused as to how to reconcile her sometimes conflicting roles of wife, mother, and school teacher. She made herself feel guilty by constantly telling herself that she did not measure up to "society's" standards of how a woman "should" act. The subject had become irritable toward her children and husband, and her teaching performance had declined. She had considered killing herself, and she felt as though she was being punished. She felt fatigued much of the time, and she had lost interest in sex.

Subject 8's daily scores on the Beck Depression Inventory and on the three Behavior Rating Scale measures are presented as Figure 15. On the BDI there was a slightly downward median trend during the baseline phase. During treatment the trend was even more downward, but there is not a statistically significant difference (Table 1) between the data for the two phases.

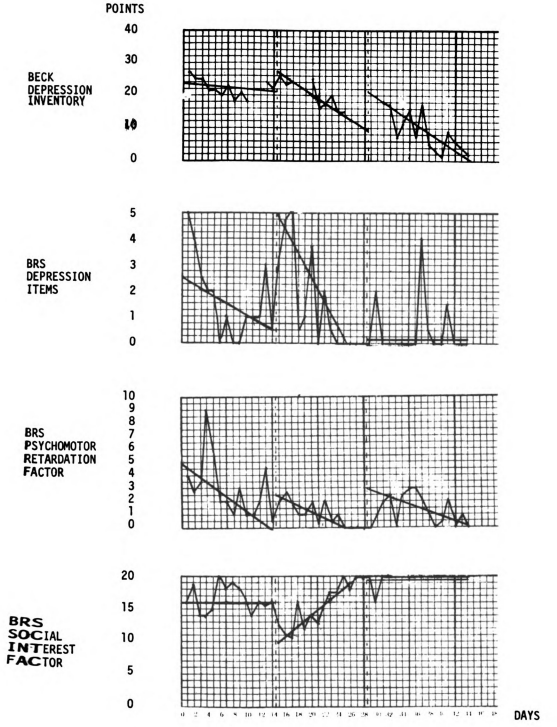


Figure 15. Subject 8; Daily scores on four dependent measures of depression.

During the reversal phase a similar downward trend is apparent, but there is a statistically significant difference between the data of the treatment and reversal phases ($p < .001$). Comparing baseline and reversal conditions, there is a lowered level of depression during reversal, and this change is statistically significant. Subject 8's performance on the BDI fails to support Hypothesis 1, but does support Hypotheses 2 and 3.

There was a declining median trend for BRS Depression scores during the baseline phase. A declining trend during treatment was not statistically significant (Table 2) in the desired direction from the baseline data. A leveling of the median trend during the reversal phase is indicative of data which were statistically significant ($p < .001$) from the treatment data. Because of the declining trend during baseline, the reversal data were not statistically significantly lower than baseline data. Thus for the Depression item scores, Hypotheses 4 and 6 were not supported. Only Hypothesis 5 is supported in this case.

A similar pattern may be observed in Subject 8's performance on the BRS Psychomotor Retardation factor. There was a downward median trend during baseline, followed by another declining trend during treatment. No statistically significant differences were found

(Table 3) between the data for the two phases. Hypothesis 7 is thus not supported. The median trend during the reversal phase is likewise downward, but is higher than during treatment. This difference is statistically significant ($p < .001$), and Hypothesis 8 is supported. Again because of the declining median trend during baseline, the data during the reversal phase are not statistically significantly different in the desired direction, and Hypothesis 9 is not supported.

The data for the BRS Social Interest factor are described by a horizontal median trend during the baseline phase. The data during the treatment phase are statistically not significantly different (Table 4) from data predicted by the baseline median trend. There is a change to horizontal of the median trend during the reversal phase. This change is in the desired direction, and is statistically significant. The differences between the baseline and reversal median trends are in the desired (higher) direction, and are statistically significant. Thus, the Social Interest factor data fail to support Hypothesis 10, but lend support to Hypotheses 11 and 12 for this subject.

Subject 8's pre- and posttest MMPI profiles are included as Figure 16. It may be observed that on the scales of interest, Scales 2 and 7, her posttest scores have declined at least one standard deviation.

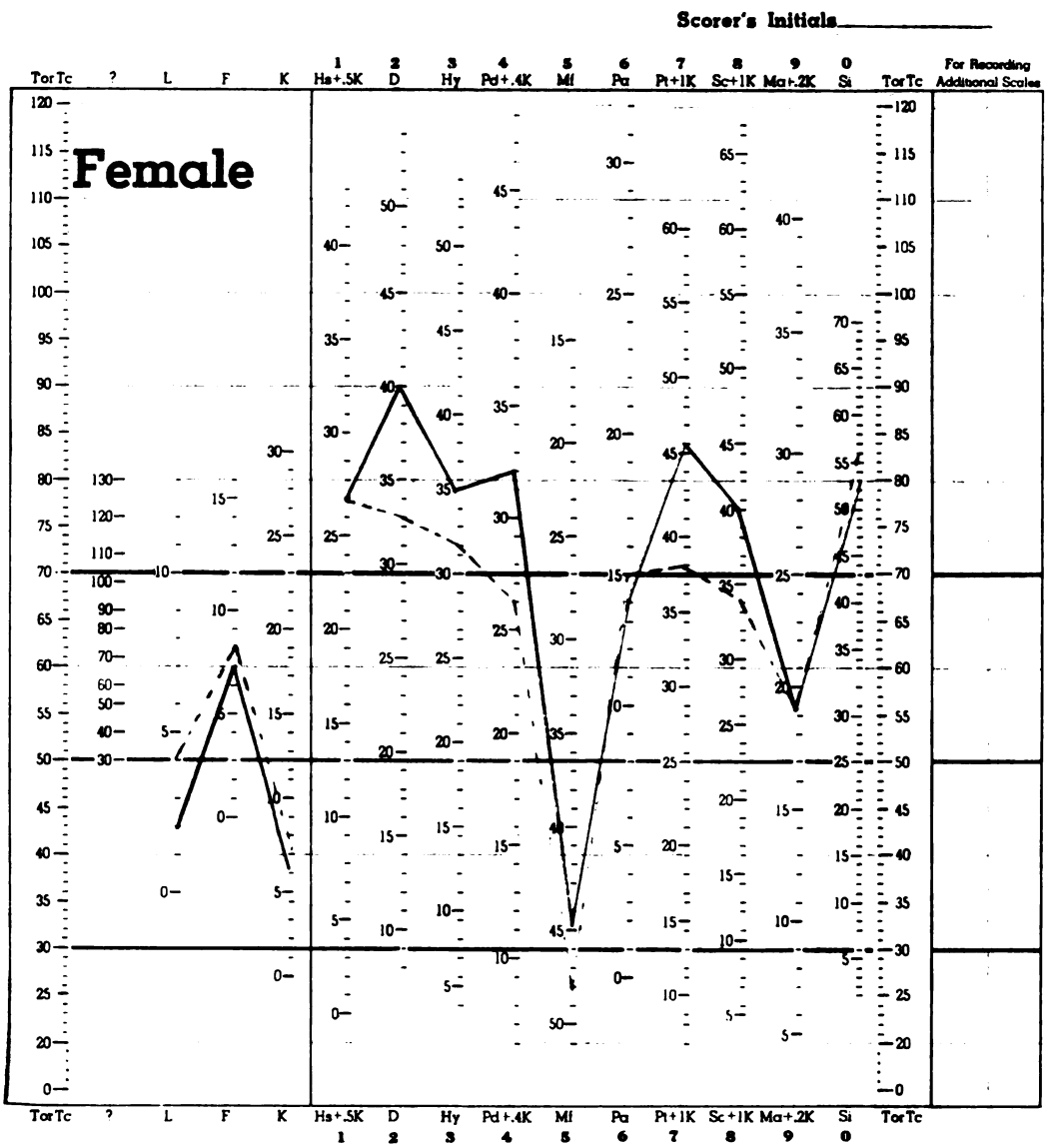


Figure 16. Subject 8; MMPI pre- and posttreatment profiles.

Thus, she is apparently less depressed and anxious. Also Scale 4 is down, indicating less marital and/or social concerns. There remains an elevation on Scale 0, social introversion, and a valley on Scale 5, an indication of dependency and subservience. There remains an elevation on Scale 1, a measure of hypochondriachal and/or psychosomatic tendencies.

Following treatment, Subject 8 was desirous of further counseling. She states that she is much less depressed, but that occasionally she has a "bad day." She panics, and begins to worry if she will become depressed again. Right now she wants only supportive counseling. She wishes to avoid discussions about her interpersonal and psychosomatic difficulties. Her therapist is observing her wishes, for the time being, but plans to initiate treatment for these other areas in the future. At present the subject does not appear depressed. She claims to be thinking clearer, and to be less irritable and more confident. She no longer considers suicide, and her drinking is under control.

Subject 9

Subject 9 is a 26-year-old female who was referred by her family physician. She was described by the physician as a married woman with two small children, who since the recent birth of her baby had become increasingly nervous and depressed. She was

sleeping a great deal, had withdrawn socially, and was extremely irritable toward her children. She stated that she had been depressed since she got married. She felt as though she had given so much to others that there was nothing left of herself. She is a college graduate and a commercial artist, but marital and maternal demands left little time for her career. Subject 9 described a disturbed pattern of sleep, crying easily, feelings of hopelessness and helplessness, and a loss of interest in sex. She felt insecure and unworthy of others' love, and she had isolated herself from friends.

Subject 9's performance on the four daily measures of depression is presented as Figure 17. On her scores for the Beck Depression Inventory it may be seen that there was a reduction in the median trend during the treatment phase. This change was statistically significant ($p = .019$) (Table 1) and in the desirable direction. There was an uplift of the data during the reversal phase, also in the predicted direction at a level of statistical significance. The reversal phase data were lower than predicted by the median trend of the baseline data; this difference also was statistically significant. Thus, for Subject 9, all changes between phases were statistically significant in the desired directions. For the BDI data, Hypotheses 1, 2, and 3 are all supported.

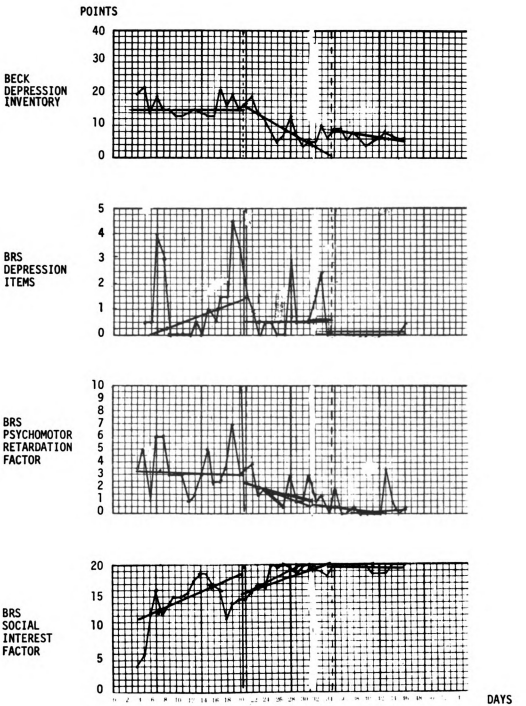


Figure 17. Subject 9; Daily scores on four dependent measures of depression.

Her performance on the BRS Depression items yields an upward median trend during the baseline phase. The median trend during the treatment phase is lower and horizontal. This reduction is desirable, and there is a statistically significant difference (Table 2) between the data for the two phases. Hypothesis 4 is thus supported. Into the reversal phase, the data lowered further (to almost zero), and the median trend remained horizontal. The predicted upturn in the median trend did not occur, and the data for the two phases are not significantly different. Hypothesis 5 is not supported in this case. The performance during the reversal phase is, however, lower than that predicted by the median trend of the baseline phase, and the difference is statistically significant ($p < .001$). Hypothesis 6 is supported by Subject 9's BRS depression scores.

Looking at the data for the BRS Psychomotor Retardation factor, there was a decreasing median trend during the reversal phase, which was not statistically significantly different from the baseline phase (Table 3). Compared to the median trend for the treatment phase, there was an upward trend in the data during the reversal phase; this difference was statistically significant. Finally, the data for the reversal phase were lower than data predicted by the median trend of the baseline phase. Thus, across time there was a

decrease in the scores on the Psychomotor Retardation factor, and the data support Hypotheses 8 and 9, but not Hypothesis 7.

The BRS Social Interest factor had an increasing median trend during the baseline phase. There was an increasing median trend during the treatment, but differences between baseline and treatment phases were not statistically significant (Table 4). During the reversal phase, the data leveled off, and there was a statistically significant ($p < .001$) difference between treatment and reversal performance. Overall there was an increase in Social Interest but the scores during the reversal condition are not statistically significantly higher than those predicted by the median trend of the baseline phase. The data fail to support Hypotheses 10 and 12, but do support Hypothesis 11.

Subject 9's MMPI profiles are presented as Figure 18. Appreciable reductions in her scores on Scales 2 and 7 may be observed. The posttest profile is well within normal limits. The remaining peaks on scales 3 and 6 indicate an individual who has a tendency to react in an extreme and irrational fashion to stressful situations, and who is somewhat overly sensitive to views and perceived criticism from others. She has a normal degree of depression and anxiety, and she is far more pleased with her current level of social functioning.

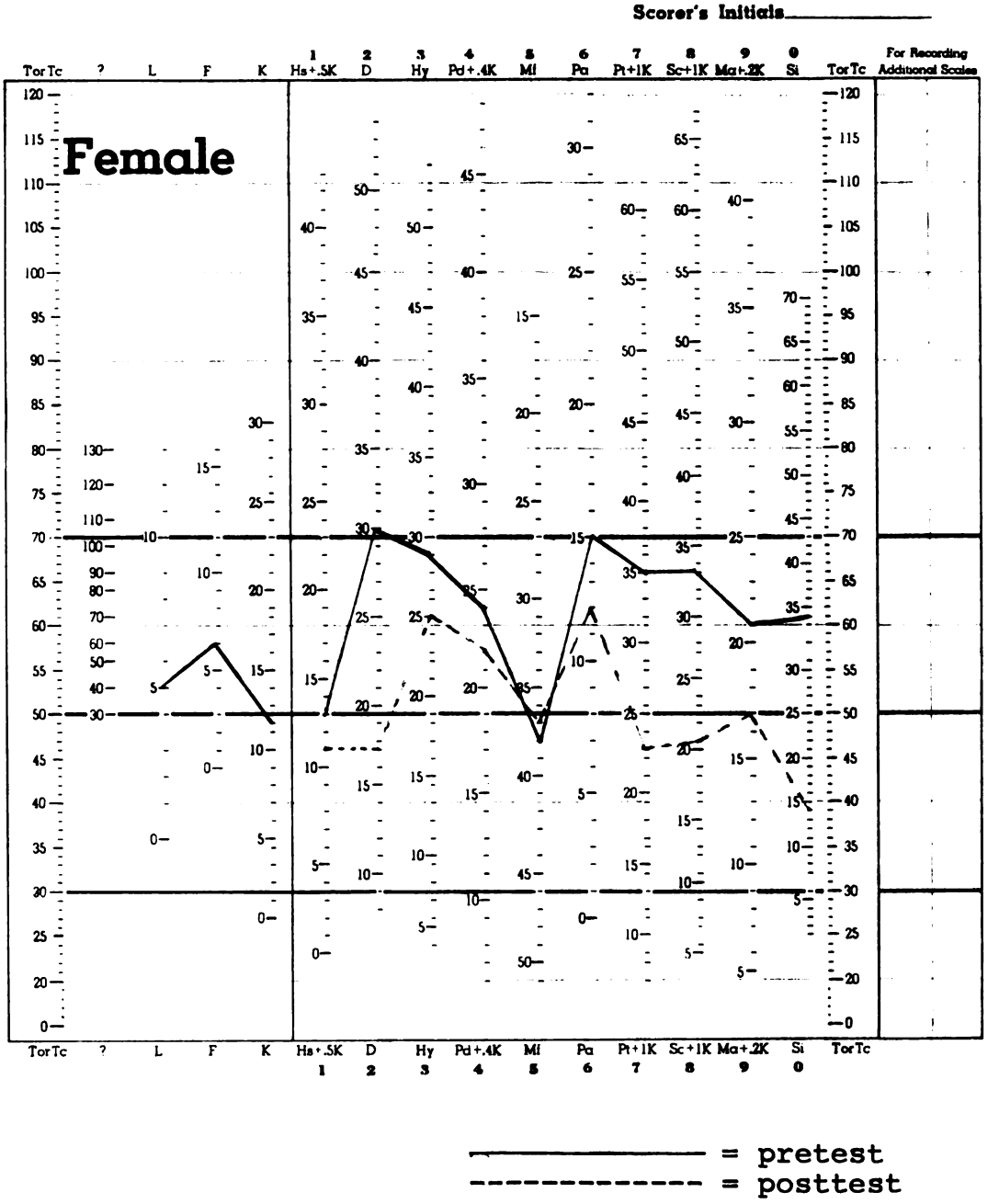


Figure 18. Subject 9; MMPI pre- and posttreatment profiles.

Following the posttesting, the MMPI results were interpreted to her, and she was asked about her current emotional status. Subject 9 reported that she felt happier than she had in several years, and that she felt more in control of her emotions. She did not let "little things" bother her so much, and she felt more adequate and satisfied as a wife and mother. She had been able to do more of her domestic chores, and because of this she was able to complete more commercial art free-lance jobs, much to her delight. She declined further counseling at the mental health center at this time, stating that she wanted "to get used to feeling good for a change." Her physician later contacted the center, noting her progress emotionally and in her child-rearing practices.

Subject 10

Subject 10 is a 23-year-old woman who came to the mental health center for counseling following her divorce. She was having an extremely difficult time getting along without her ex-husband, and was unsure whether she could ever find another man if she let go of him. She felt extremely inadequate and unattractive, and she made few attempts to make new friends, either male or female. Subject 10 felt nervous and depressed, and she cried over "just about anything." Her sleep pattern was disturbed and restless, and her appetite

was poor. She had withdrawn socially, she lacked motivation to do her housework or to work at her job as a nurse's aide, and she felt guilty and disinterested about sex.

Her performance on the four daily measures of depression is presented as Figure 19. It may be observed that the data cease about halfway through the treatment phase. For various reasons she and her two raters stopped recording data at approximately the same times. Subject 10 apparently gave up on herself and the depression treatment program near the time of the third experimental session. Her therapist noted that she felt very dejected that session, and that helping her to generate five positive self-evaluatory statements was "like pulling teeth." Each time a statement was decided upon, she found several ways to negate the positive attribute. She had practiced her homework for the session only a few times, and in general seemed unmotivated and uncooperative with the therapist. This investigator repeatedly attempted to contact her. She did not have a telephone, so messages were left with a neighbor and with her mother to call and/or to bring in her data-reporting cards to the center. Subject 10 ignored these requests, stating that she kept "forgetting" because she was "too busy."

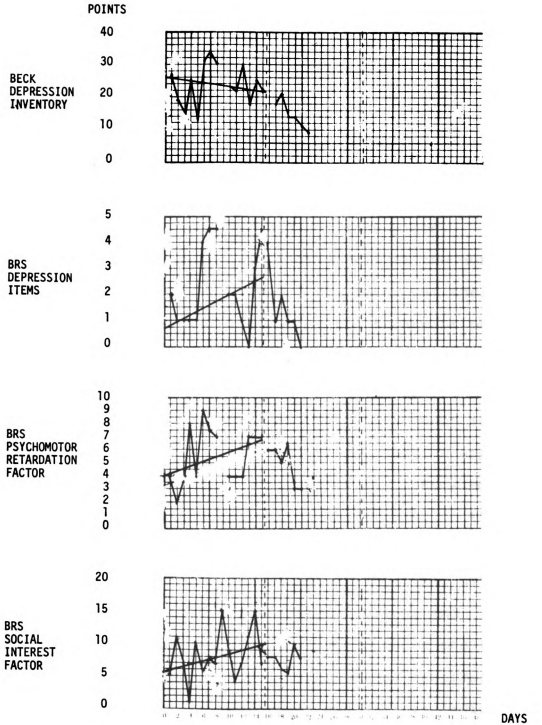


Figure 19. Subject 10; Daily scores on four dependent measures of depression.

One of her raters was a girlfriend. Sometime early during the treatment phase, the friend was not as supportive and sympathetic as the subject thought she should be. Subject 10 stopped associating with the girlfriend and the girl notified this investigator that she would not be filling out the daily Behavior Rating Scale until their conflicts were resolved. Apparently this resolution did not take place.

Her other rater was a co-worker at the nursing home where the subject worked. The rater was assigned to a different shift, also during the treatment phase. The co-worker sent a letter to this investigator, apologizing for not being able to rate Subject 10's behavior any longer because of their infrequent meetings, and offering to help in any additional fashion appropriate to the treatment. This offer was acknowledged, but unfortunately the daily ratings relevant to this study were terminated.

Thus, due to difficulties in obtaining daily ratings on Subject 10's depressive feelings and behaviors, data are complete only throughout the first half of the treatment phase. Statistical analyses of the data could not be performed, and this is indicated where appropriate in Tables 1-4.

She did complete the posttesting following the reversal phase, and her pre- and posttest MMPI profiles

are included as Figure 20. It may be seen that her posttest scores on Scales 2 and 7 decreased, but mild amounts of depression and anxiety remain. The lower scores on Scales 4 and 0 indicate that she is more satisfied with her social relationships and functioning. The peaks remaining on Scales 6 and 8 are disturbing to this investigator; in fact, the score on Scale 6 increased as compared to the pretest score, and Scale 8 is essentially unchanged. These elevated scales indicate an oversensitivity to the opinions of others, if not outright suspiciousness and distrust. Her social withdrawal and oversensitivity may be due to so-called schizoid behavioral tendencies, if not underlying psychotic or pre-psychotic emotional conflicts (Marks, Seeman, & Haller, 1974).

Following her completion of the depression program, Subject 10 was desirous of further counseling. Due to apparent remaining emotional and interpersonal problems, this investigator referred her to a therapist at the mental health center who can be understanding and supportive, yet who is putting upon her the responsibility for solving her own problems. Subject 10 frequently does not care for this approach, but is regularly attending her weekly counseling sessions.

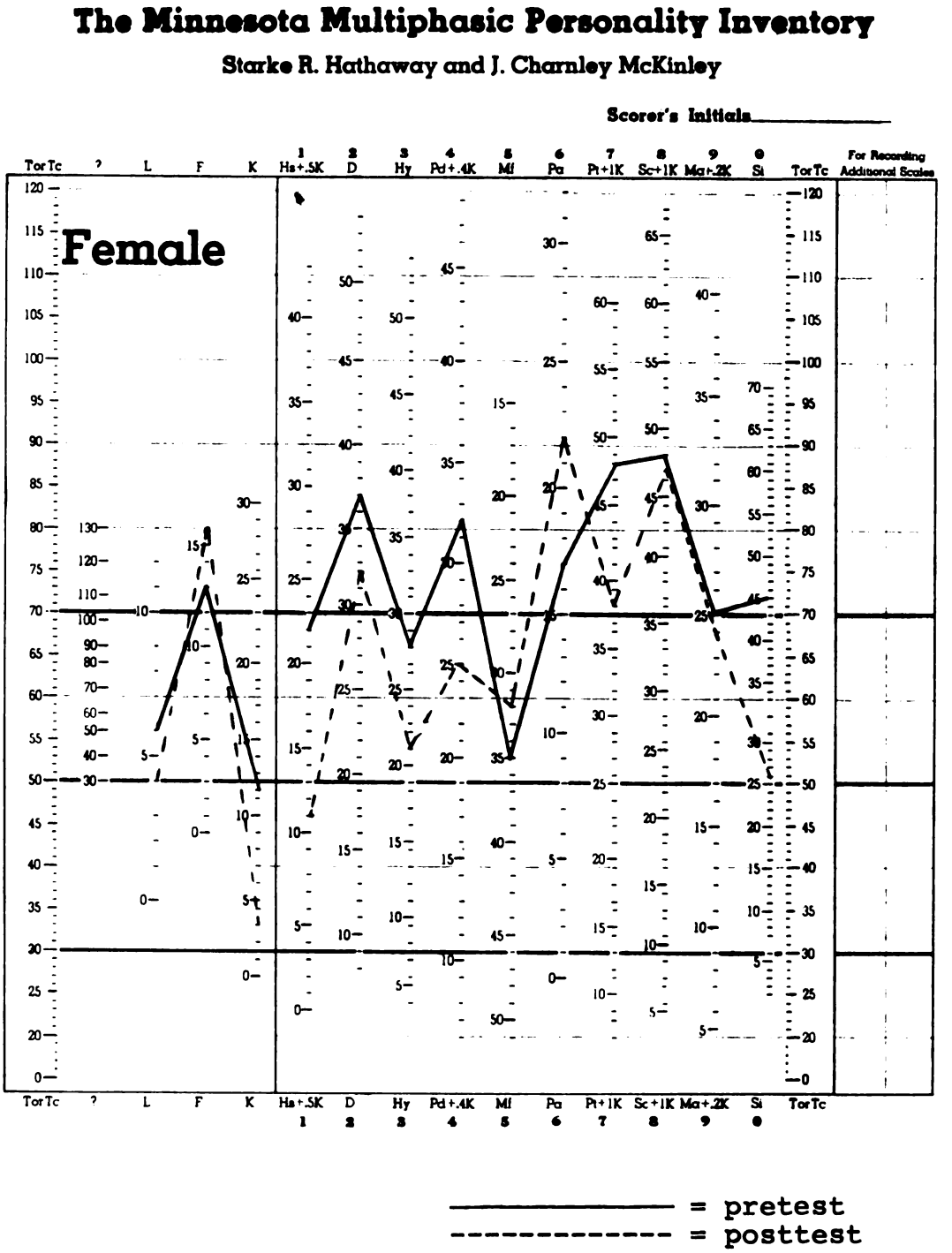


Figure 20. Subject 10; MMPI pre- and posttreatment profiles.

Subject 11

Subject 11 is a 27-year-old divorced woman who has a daughter. She was referred to the mental health center by her fiance, who thought she "needed help." She reported that she had been depressed for one and one-half months since her boyfriend left her. She had isolated herself socially, and she was frightened of what she would do without him. She had difficulty sleeping, and was crying almost all the time. She found it difficult to take care of her housework, and she was irritable toward her daughter. She had considered suicide, and threatened her fiance with slitting her wrists if he didn't come back to her.

Her performance on the four daily measures of depressive functioning are presented as Figure 21. It may be seen that there was a declining median trend on the Beck Depression Inventory even during the baseline phase. A similar trend is apparent during the treatment phase, and the data for the two phases are statistically not significantly different (Table 1). There was a leveling off of the data in the reversal phase as predicted, but the difference between the treatment and reversal phases is not statistically significant at the $\alpha = .05$ level ($p = .145$). Because of the downward median trend of the baseline data, there was not a statistically significant difference

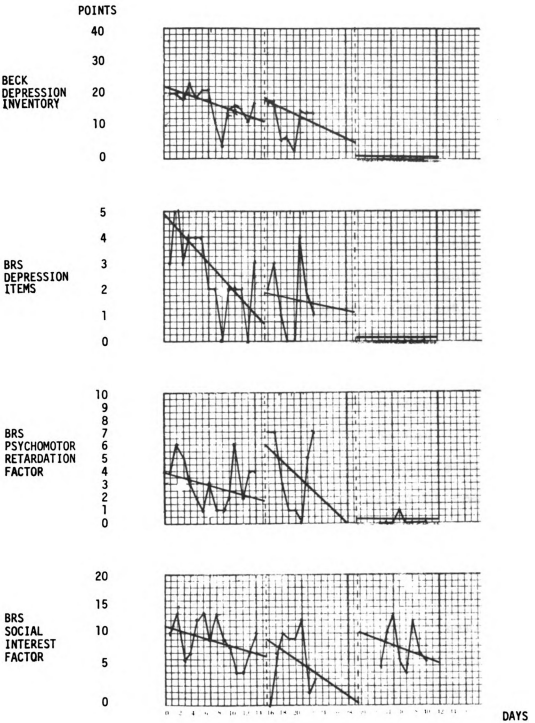


Figure 21. Subject 11; Daily scores on four dependent measures of depression.

between the reversal data, and data predicted by the baseline median trend. Thus, for this case, the BDI data support none of Hypotheses 1, 2, and 3.

Subject 11's performance on the BRS Depression items during baseline also showed a downward median trend. Consequently, the data during the treatment phase were not lower than data predicted by the baseline median trend, and statistical significance was not achieved (Table 2). A bottoming-out of the median trend in the reversal phase produced by the data was not higher than that predicted by the median trend of the treatment phase. The difference between the two phases was not statistically significant in the desired direction. Finally, her performance during the reversal phase was not significantly lower statistically than that predicted by the median trend of the baseline phase. The data do not support any of the predictions regarding the BRS Depression items, that is, Hypotheses 4, 5, or 6.

During the baseline period, there was likewise a declining median trend of the BRS Psychomotor Retardation scores. The median trend declined even more during treatment, but the difference between the data for the two phases was not statistically significant (Table 3). The data, then, do not support Hypothesis 7. During the reversal phase, there again is a bottoming-out

of the median trend, but these data are higher than the data predicted by the median trend of the treatment phase and this difference is statistically significant ($p = .004$). Hypothesis 8 is thus supported. Although there was a decrease in her scores on this factor as the study progressed, the data during the reversal phase are not lower than those data predicted by the median trend of the baseline phase, and there is no statistically significant difference in the desired direction. Hypothesis 9 is not supported.

A downward median trend during the baseline phase of the BRS Social Interest factor predicted data during the treatment phase which were not significantly different statistically (Table 4) than actually observed. Hypothesis 10 is not supported by this subject's data. Likewise, the median trend of the treatment phase data predicts data during the reversal phase which are lower than the observed data. A statistically significant difference in the desired direction was not obtained, and Hypothesis 11 is not supported. Comparing baseline and reversal phases, there was an increase in the scores on Social Interest. This difference is statistically significant, and the data support Hypothesis 12.

Subject 11's pre- and posttest MMPI profiles are included as Figure 22. Considerable reductions in her scores on Scales 2 and 7 may be observed. In fact,

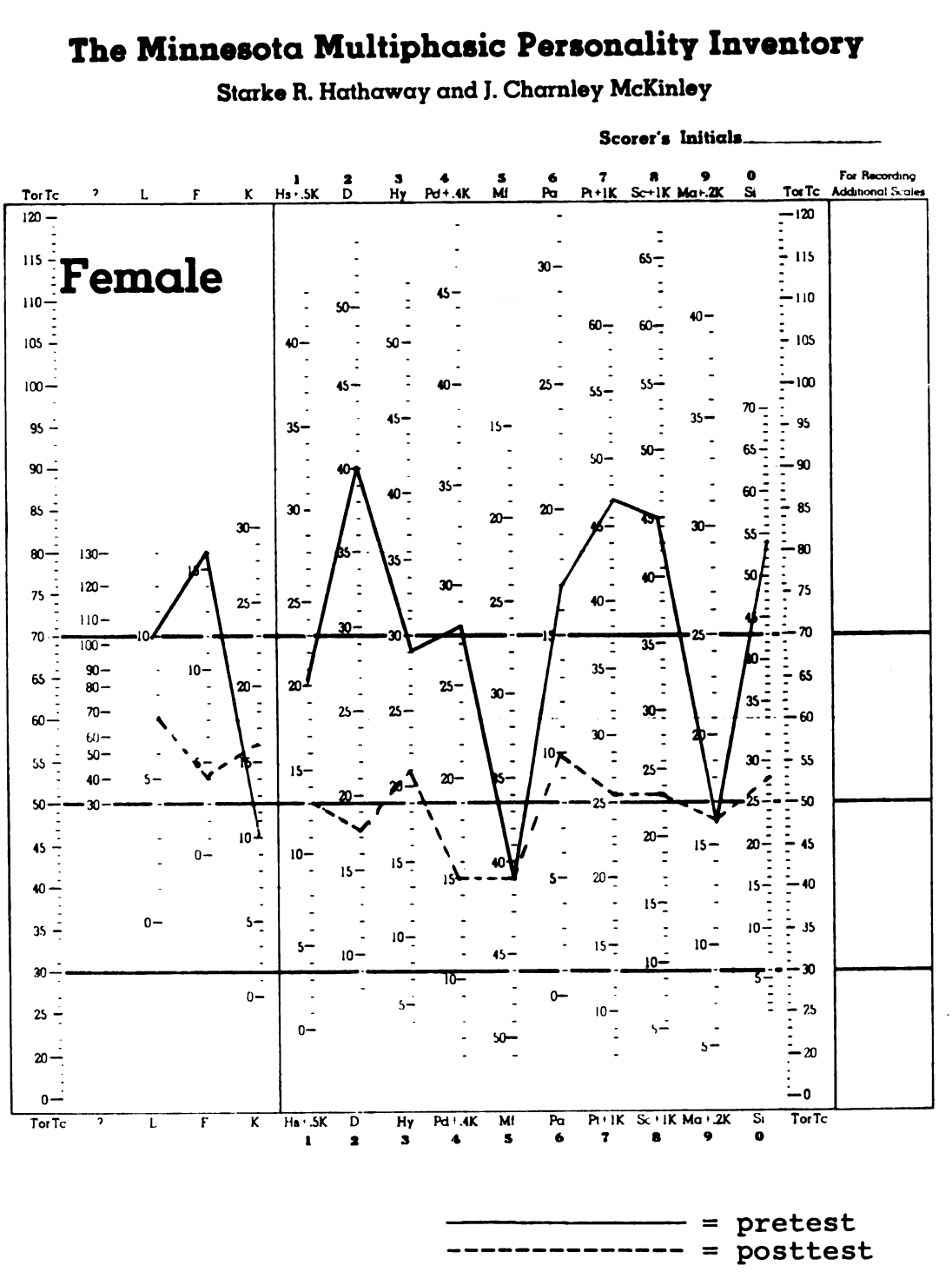


Figure 22. Subject 11; MMPI pre- and posttreatment profiles.

the clinical scale configuration has dropped to well within normal limits. This was one of the more dramatic reductions in MMPI clinical scale scores of any of this study's subjects, and it may be observed that Subject 11's resulting posttest profile is similar in appearance to Subject 9's (Figure 18).

Following the completion of the reversal phase, Subject 11 felt no longer in need of counseling. She was not depressed, and she was becoming more and more socially active. She had demanded that her fiance come to a decision regarding their relationship, and he had rejoined her. She reported feeling more in control of her situation and her emotions, and this pleased her a great deal.

Overall Results

Hypothesis 1

Hypothesis 1 predicted a reduction in subjects' level of depression, as measured daily by the Beck Depression Inventory, following the treatment intervention. It may be observed in Table 1 that this hypothesis was supported by the data from 4 of the 9 subjects.

Hypothesis 2

It was hypothesized that the level of depression as measured by the BDI would increase during the reversal

phase. As indicated in Table 1, data from 4 of 9 subjects support this hypothesis. For these subjects, Hypothesis 2 is supported; there was an increase in depression level during the reversal phase. This result is particularly crucial to the study. When considered along with Hypothesis 1, Hypothesis 2 lends support to the notion that the treatment, and not extraneous variables affected subjects' level of depression. When the treatment was instituted, BDI scores decreased; with treatment withdrawn (reversal) BDI scores increased.

Hypothesis 3

Although Hypothesis 2 predicted that BDI scores would rise during the reversal phase, it was predicted that due to generalization of learning which took place during treatment, BDI scores would be lower during reversal than during the baseline phase. Again referring to Table 1, it may be seen that this hypothesis was supported by 6 of 9 subjects' data at $\alpha = .05$. Hypothesis 3 is thus supported by the data of six subjects. Overall there was a reduction in level of depression, and this reduction in BDI scores was resistant to extinction, at least during the course of this study.

Hypothesis 4

There was hypothesized a reduction in the Behavior Rating Scale Depression item scores immediately following the point of treatment intervention. It may be observed in Table 2 that 3 of 10 subjects yielded data which support the prediction at a level of statistical significance. Thus for 3 of 10 subjects Hypothesis 4 is supported; there was a reduction in the Depression scores during treatment.

Hypothesis 5

It was predicted that there would be an increase in the BRS Depression scores following the termination of treatment, i.e., during the reversal phase. This hypothesis was supported at the $\alpha = .05$ level by the data of 4 of 9 subjects (Table 2). As with Hypothesis 2, Hypothesis 5 lends support to the notion that the treatment itself affected the data, in this case behaviors assumed to be related to depression.

Hypothesis 6

It was hypothesized that during the reversal phase the daily BRS Depression item scores would remain lower than during baseline. This hypothesis was supported by data from 3 out of 9 subjects at $\alpha = .05$. As measured by the BRS Depression items, learning which took place during the treatment phase continued during reversal.

Hypothesis 7

A reduction in BRS Psychomotor Retardation scores was predicted following the treatment intervention. The data from 4 out of 10 subjects (Table 3) supported this hypothesis at the $\alpha = .05$ level. For 4 subjects in this study, Hypothesis 7 was supported. There was a decline in scores on the Psychomotor Retardation factor during treatment.

Hypothesis 8

It was predicted that there would be an increase in daily BRS Psychomotor Retardation scores during the reversal phase. This hypothesis received support from the data of 5 out of 9 subjects at $\alpha = .05$. Thus, Hypothesis 8 is supported by the data of 5 subjects; there was an increase in Psychomotor Retardation following the termination of treatment. Hypotheses 7 and 8, then, support a treatment, which while in effect, significantly reduced subjects' scores on the BRS Psychomotor Retardation factor.

Hypothesis 9

It was predicted that the Psychomotor Retardation scores would remain lower during the reversal period than during baseline. Data from 5 out of 9 subjects supported this hypothesis at $\alpha = .05$.

Hypothesis 9 was supported; the reduction in Psychomotor Retardation was resistant to extinction, continuing through the reversal phase.

Hypothesis 10

It was hypothesized that there would be an increase in Social Interest as measured by the Behavior Rating Scale immediately following the treatment intervention. This hypothesis was supported by 2 out of 10 subjects at $\alpha = .05$ (Table 4). There was an increase in Social Interest scores during the treatment phase, but this increase is not necessarily due to the treatment. There were in the cases of seven subjects upward median trends on the Social Interest factor during the baseline phase. Such increasing median trends during baseline would not have been significantly different statistically from desirable data during the treatment phase.

Hypothesis 11

Social Interest scores were expected to decline during the reversal phase, as compared to data during the treatment phase. To a statistically significant degree ($\alpha = .05$) this was the case for 4 out of 9 subjects in this study. Thus, these data support Hypothesis 11; there was a decline in Social Interest following treatment. Even though there was a reversal effect,

the lack of support for Hypothesis 10 indicates that variables other than the treatment may have been operating to increase performance on Social Interest.

Hypothesis 12

The Social Interest factor was predicted to be higher during the reversal phase than during baseline due to generalization of learning and resistance to extinction. This hypothesis was supported by the data of 4 out of 9 subjects (Table 4) at $\alpha = .05$. Hypothesis 12 is thus supported by the data of 4 subjects; there was a general increase in scores on the BRS Social Interest factor which persisted through the reversal phase.

It has been observed that the 12 research hypotheses are supported by the data of varying proportions of subjects. The proportions range from 2 of 10 subjects' data supporting Hypothesis 10 to 6 of 9 subjects' data supporting Hypothesis 3. A discussion of these results follows in the next chapter.

Supplementary Findings

MMPI

As a supplementary procedure, all clients were given the MMPI as part of their evaluation for possible inclusion into this study. Upon completion of the reversal phase of the study, subjects were requested

to complete a second MMPI. All subjects except Subject 1 completed a posttest, and the pre- and posttest MMPI profiles have been included with the discussion of each subject's performance during the study.

As a means of assessing overall changes in the MMPI profiles, group mean pretest profiles and posttest profiles have been computed for all subjects except Subject 1. These profiles are presented as Figure 23. The group mean pretest profile is the 2-7 type with additional peaks on Scales 4 and 0. This profile is, of course, representative of depressed, anxious individuals who are socially introverted and who have social and/or marital dissatisfactions. This profile is quite similar to the 2-7 code type profiles discussed by Marks et al. (1974).

The group mean posttest profile may be seen to have decreased considerably from the pretest profile. The profile is completely within normal limits, and reductions of at least two standard deviations each may be seen for Scales 2 and 7. Scales 4 and 0 are likewise lower (at least by one standard deviation each), indicating decreased social dissatisfaction and introversion. The posttreatment profile in Figure 23 compares favorably with the mean discharge profile for hospitalized 2-7 patients given in Marks et al. (1974). Thus, the decrease in MMPI clinical

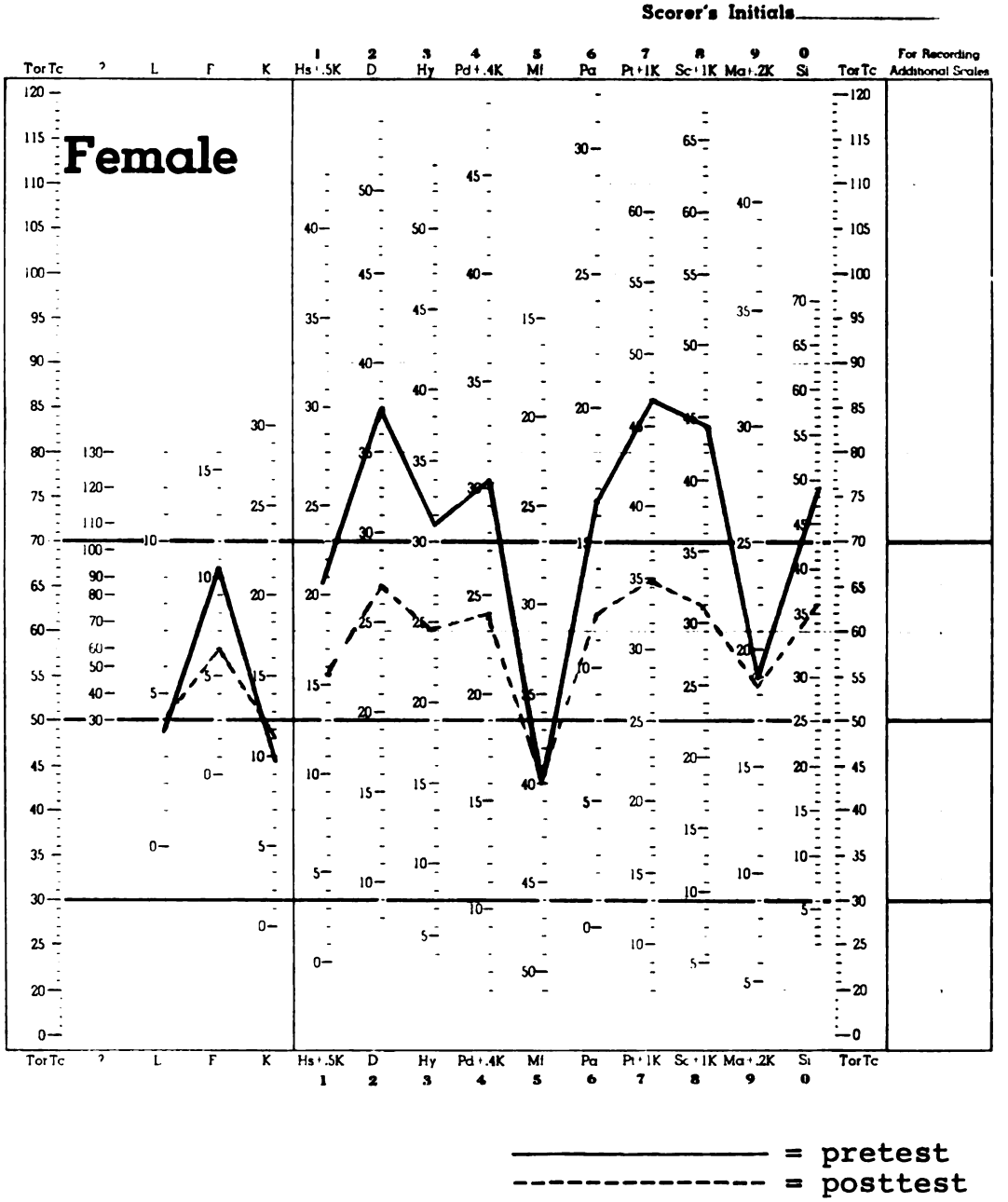


Figure 23. Group mean pre- and posttreatment MMPI profiles over all subjects (N = 10). (Time span approximately six weeks.)

scale scores of subjects in this study is consistent with previous studies of the treatments of depressed individuals.

The pre- and posttest MMPI scores on each clinical scale were compared using matched-pairs t-test statistics. The results of the statistical tests are given as Table 5. Probabilities for all significant tests are given in Table 5. Because each probability is two-tailed, reductions in MMPI scores may be analyzed at $\frac{\alpha}{2} = .025$. Furthermore, since must be partitioned due to repeated significance testing, each t-test must be decided upon at $\frac{\alpha}{(2)\ (10)} = .0025$. It may be seen that five of the 10 MMPI scales were reduced, and that these decreases were significant at the $\frac{\alpha}{(2)\ (10)} = .0025$ level. The scales so significantly reduced include 2 and 7, MMPI scales of interest.

Interrater Reliabilities

Interrater reliabilities were calculated for subjects' daily observations of themselves and by others on their performance on items of the Behavior Rating Scale. Reliability coefficients were computed for each subject on each of the dependent variables obtained from the BRS--Depression, Psychomotor Retardation, and Social Interest.

For subjects whose data were obtained from observations from three raters (self- and two

Table 5

Results of Matched-Pairs T-tests Between Pre- and Posttreatment Means (N = 10) on MMPI Clinical Scales. (Time span approximately six weeks.)

Scale	t-value	d.f.	p (two-tailed)
1-Hs	3.05	9	.014
2-D	5.61	9	$\leq$ .001[a]
3-Hy	4.58	9	$\leq$ .001[a]
4-Pd	5.15	9	$\leq$ .001[a]
5-Mf	-0.13	9	.900
6-Pa	2.44	9	.037
7-Pt	8.37	9	$\leq$ .001[a]
8-Sc	5.88	9	$\leq$ .001[a]
9-Ma	1.32	9	.218
0-Si	4.06	9	.003

[a]Indicates statistical significance at $\frac{\alpha}{2(10)} = .0025$.

other-raters) per day, Hoyt's analysis of variance method (1941) was used to compute the interrater reliabilities. For subjects whose data were typically obtained from observation by two raters (self- and only one other-rater) per day, a Pearson product-moment correlation coefficient (Pearson, 1907) was computed. Although this investigator repeatedly stressed to subjects the desirability of having their behavior rated daily by two others, in some cases this was not feasible. There were three subjects whose daily scores were consistently obtained from less than two raters. These three subjects include individuals whose BRS data were incomplete for the total time of the study; reliability computations were not attempted for such data.

It should be noted that the Hoyt formula is essentially a derivation of the Pearson r, and interrater reliabilities obtained by the two methods may be considered equivalent statistics. Reliability coefficients obtained from eight subjects for each of the three BRS variables are presented as Table 6. All computations were performed by computer with a widely used program, the SPSS (Vogelback Computing Center, 1975).

It may be seen that there is much diversity among the individual correlation coefficients in Table 6. To summarize across subjects for each

Table 6

Interrater Reliability Coefficients for Behavior Rating Scale Variables

Subject	Method Computed	Depression	Psychomotor Retardation	Social Interest
2	Hoyt-ANOVA	.43121	.30399	.73848
4	Hoyt-ANOVA	Incomplete Data	Incomplete Data	.81133
5	Hoyt-ANOVA	.25649	-.02182	-.06886
6	Hoyt-ANOVA	.28018	-.01389	-.85783
8	Hoyt-ANOVA	.46302	.42000	.74383
3	Pearson-*r*	.2910	.2219	.6405
7	Pearson-*r*	-.0579	-.0616	.0921
9	Pearson-*r*	.6420	.3141	.6923
Across Subjects	Z_r transformation	.344	.163	.399

variable, individual correlation coefficients were transformed into Zr scores (Fisher, 1921). The Zr scores were summed and meaned, and transformed back into mean r-values for each variable. $\bar{r}$-values are presented in Table 6.

The resulting interrater reliability values for the three BRS variables deserve further amplification, and this will be discussed in the next chapter.

CHAPTER IV

DISCUSSION

Summary

The purpose of this study was to evaluate the effects of cognitive-behavior modification upon depressed individuals. These individuals were clients of an outpatient community mental health center. The effects of a cognitive-behavioral intervention were assessed using a client self-rated scale of depressive thoughts and feelings, and by a self- and other-rated scale of depressive behavior.

Four graduate students in counseling with training and experience in behavior modification were trained in the theory and practice of the cognitive modification of depression. Specific training procedures for these therapists are described. Three therapists were each assigned three subjects, and the fourth therapist was assigned two subjects. The 11 subjects were selected from 39 clients of a community mental health center referred for possible inclusion in this study by mental health staff persons.

Subjects were accepted for the study based upon specified screening criteria including clinical signs, observed client behavior, client history, presenting problem(s), MMPI profile, Shipley-Hartford scores, and score on the Beck Depression Inventory.

Following each subject's acceptance into this study, she appeared for an interview with this investigator. The subject was furnished a copy of the Beck Depression Inventory and pre-dated copies of daily response cards, and she was requested to complete the BDI questionnaire each day throughout the study.

The subject was requested to bring two significant others to the interview with this investigator. The significant others were to serve as raters for her daily behavior. The subject and the raters were furnished copies of the depression Behavior Rating Scale, an abbreviation of the NOSIE-30, to complete each day on a pre-dated response card.

Subjects and their raters completed the daily response cards through a baseline phase of 7, 10, or 14 days, a two-week treatment phase, and a two-week reversal phase. Data are plotted for each subject for each experimental day and across four dependent variables. The Beck Depression Inventory was one of the daily repeated measures. Items from the depression Behavior Rating Scale yielded the three remaining daily repeated

measures--Depression items, Psychomotor Retardation factor, and Social Interest factor.

The treatment intervention consisted of four sessions over a two-week period. During the first session the therapist established rapport and structured the treatment phase. The subject was furnished a pamphlet, "Coping with Depression," and the booklet was discussed. The therapist suggested that the subject read the pamphlet once each day until the second treatment session, and whenever else she experienced feelings of depression.

During the second treatment session, the therapist assisted the subject in identifying at least five depressive cognitions and their corresponding challenges. She was instructed to read the list of depressing cognitions and challenges before engaging in high probability behaviors until the third session.

During the third session, the therapist assisted the subject in generating a list of at least five positive self-evaluatory statements. She was to read the list before engaging in a high probability behavior before the last treatment session.

In the fourth session, the therapist reviewed the cognitive treatment of depression, reinforced learning, and scheduled the subject for a followup appointment with this investigator two weeks later.

At that time the subject's current level of psychological functioning was evaluated clinically, and she was administered a second MMPI. Any concerns she had regarding the treatment were discussed, and if the subject desired, further mental health services at the center were offered.

A multiple-baseline design was employed in the study. Self-reported level of depressive symptomatology (BDI) and self- and other-rated depressive behaviors (BRS) were charted daily as repeated measures. The treatment effects were contrasted across four dependent variables and across individuals at the same relative points in the treatment schedule.

Based upon two assumptions made by Beck (1974c) concerning the effects of the cognitive modification of depression, 12 research hypotheses were generated for this study. For each of the four dependent measures of depression, it was hypothesized that during the treatment phase the subject's rated depression would decline. The depression rating on each measure would rise again during the reversal phase, a second hypothesis. Finally it was hypothesized that depression scores during the reversal phase would not rise to the level of the baseline phase.

The data for each subject are presented in an intensive case study format. Her performance on each

dependent variable is presented graphically, and significance tests have been performed for all 12 research hypotheses on the data from each subject. Finally, supplementary data, such as pre-posttreatment changes in her MMPI profile, are presented along with a discussion of the outcome of treatment and the subject's current therapeutic status.

The research hypotheses are supported by varying proportions of subject data. Specifically, it was found that scores on the Beck Depression Inventory, the Behavior Rating Scale Depression items, and the Behavior Rating Scale Psychomotor Retardation factor decreased during the treatment phase, and rebounded after the termination of treatment, but remained lower during the reversal phase than before the treatment intervention. Scores for the Behavior Rating Scale Social Interest factor for two subjects support the hypothesis that subjects' performance during the treatment phase was different than during baseline, but the other two research hypotheses for Social Interest were supported by data from four subjects.

Supplementary data presented for all subjects include mean MMPI profiles for pre- and posttreatment testing situations. The changes in the MMPI profile over the time of the experiment are discussed, and results of statistical tests of the changes in profile

are presented. It was found that the posttreatment MMPI mean profile was well within normal limits, and that reductions on five of the 10 clinical scales for the group were statistically significant.

It was concluded that this cognitive behavioral treatment was to varying degrees effective in reducing depressive symptomatology and behavior among clients of an outpatient clinic. The research findings are discussed below, as are implications of the present study for practice and further research.

Discussion

Overall Results

The data from the four daily repeated measures of depression support the research hypotheses to varying degrees. Rated covert and overt indices of depression decreased during the treatment phase as predicted, increased during the reversal phase as hypothesized, but remained lower during the reversal phase than during baseline, also as predicted.

Several conclusions may be drawn from these findings. There was a treatment effect upon three rated measures of depression. When the treatment was instituted, there was an overall decline in depression across all subjects on each of the variables BDI, BRS Depression, and BRS Psychomotor Retardation. Further, when the treatment was withdrawn, measures of depression

increased again. Thus, there was an effect upon depression which cannot be explained by variables other than treatment. As Thoresen (1972) has noted, the intensive case-study design is a time-series design described by Campbell and Stanley (1966). Such designs control for all internal sources of invalidity which might influence experimental data. Such extraneous variables include history, maturation, testing, changes in instrumentation, and regression effects. The only variable left to explain a decline of depression during treatment and an increase during reversal is the effect of the treatment itself.

In the study of depression, control of extraneous variables such as history and maturation is particularly important because of possible cyclical changes in emotions (Beck, 1974a). Another possible confounding variable in depressed individuals is the effect(s) of psychotropic medications including anti-depressants. At least five subjects (Subjects 4, 5, 6, 8, and 9) had recently been prescribed tri-cyclic anti-depressants by their physicians and were taking the medications as prescribed to a varying degree. It had been a concern that such medications might influence the outcome of this study. If anything, psychiatric medications decreased observed differences between subjects' performance during baseline and treatment phases. As may

be seen in Tables 1-4, on any one dependent measure only one of Subjects 4, 5, 6, 8, and 9 performed significantly different ($\alpha = .05$) during the treatment condition than they had during baseline. These five subjects who may have been taking anti-depressant medications did not contribute more than their share of changes in performance in the hypothesized direction(s). Thus a subject's medication status did not appear to influence the results of this study in a positive fashion; in fact, an individual's being on medication to some degree may have camouflaged the effects of cognitive-behavior modification. That is, there may have been reductions in measured depression during the baseline phase for a subject, due to medication, and this reduction would have canceled out or decreased further reductions in depression due to the treatment intervention. Baseline-treatment differences would have been lessened, and perhaps may have gone undetected. Most subjects additionally self-medicated to varying degrees with substances such as caffeine, nicotine, and ethanol. To totally guard against the effects of the so-called depression cycle and the effects of psychoactive drugs would have been virtually impossible, and it was assumed that the intensive case-study design would control for such confounding of the data. Evidently the design did not control for such confounding

effects, but as had been mentioned, treatment effects were not disproportionately inflated by possible medication effects.

The treatment was shown to affect subjects' performance on a variety of measures. That is, measures consisted of self-reports of covert phenomena such as thinking and feeling, and overt behaviors. Several manifestations and symptoms of depression were influenced by the cognitive-behavioral treatment used in this study.

Such conclusions are in agreement with, and lend support to the basic premises underlying Beck's treatment for depression. By using cognitive and/or behavioral interventions, individuals' cognitive distortions may be alleviated, and rapid decreases in depressive symptomatology may be realized. Further, such decreases in depression are interrelated, and an improvement in depressive emotions would also be manifested in behavioral improvements.

The foregoing discussion and conclusions hold true for Hypotheses 1-9, and the three dependent variables BDI, BRS Depression, and BRS Psychomotor Retardation. In contrast, data from observations of BRS Social Interest support an overall reduction in depression (more accurately an overall increase in social behaviors incompatible with feelings of depression) (Hypothesis 12), but the change began during the

baseline phase, and cannot be said to have been due only to the effects of treatment. Behaviors tapped by the Social Interest factor are associated with interpersonal interactions. Possibly certain aspects of this study which occurred before the treatment intervention increased social interaction and therefore subjects' scores on this BRS factor. Subjects were involved in placebo counseling sessions during the time their baseline data were being collected. Additionally, they were being rated by significant others, and there were probably social performance expectations perceived by the subjects. Finally, just being rated (attended to) by others was probably socially reinforcing for subjects, and would be predicted to have increased social interaction. It was hoped that the baseline condition would control for such nonspecific-to-treatment effects, and that a stable baseline on BRS Social Interest would have been obtained, but this did not occur during this study.

This investigator is uncertain what, if anything, could have been done to stabilize the baseline on Social Interest, and therefore control for nonspecific effects upon the factor. Increasing the length of baseline does not appear to have controlled for nonspecific social effects. Only two subjects had median trends during baseline which were significantly lower

statistically than treatment performance; these subjects were Subject 3 and Subject 6 (Table 4). As may be seen from the graphs of their data (Figures 5 and 11, respectively) Subject 3 was part of the 10-day baseline group, and Subject 6 was part of the two-week baseline group. The remaining subjects were evenly divided into 7, 10, or 14 day baseline lengths. Apparently, increasing the length of the baseline phase did not contribute to stabilizing the baseline, and thus to contrasting baseline to treatment performance.

In retrospect such reactive effects of subjects coming to a mental health center for counseling, even of a nonspecific variety, and of having their performance observed by others would be predicted to increase social behaviors. Such increases would normally be desirable for depressed individuals. It is unfortunate that the effects of the cognitive-behavioral treatment of depression upon Social Interest are confounded with whatever social effects were occurring during baseline.

Some support for the effects of this treatment upon Social Interest may be drawn from the decrease in scores on this factor during reversal (Table 4). Hypothesis 11 was supported, and evidently <u>something</u> was affecting social behaviors because there was a decrease when treatment was terminated.

Subjects' increase in social functioning during baseline, due to the aforementioned reasons, may have been related to observed decreases on the three other measures of depression during the baseline phase for several subjects. The exact causal and correlational relationships between the dependent variables of this study are unknown, and deserve further investigation.

The effects of sex upon subjects' performance on the dependent measures warrants discussion. It is obvious that all subjects in this study were female. Males were not specifically excluded during the study, but there were no male clients who fit the selection criteria specified for inclusion into the depression treatment program. To some extent the generalizability to males of results of this study is limited. There may be systematic differences between the ways the depressed females of this study responded to cognitive-behavior modification and the ways depressed males might respond. This investigator suspects that there would not be significant differences due to the sex of subjects, but this is conjecture. If males could have been found whose psychological characteristics had met the selection criteria for this study, it is assumed that they would have responded to the treatment similar to the female subjects.

During one of the analyses of variance attempted on the data from this study, sex of the therapist was used as a covariate in the ANOVA. Although there were not enough data to compute treatment effects, it was shown that the sex of the therapist was not found to have an effect upon the data. Thus, subjects seen by the two male therapists responded to the treatment in ways not unlike subjects seen by the two female therapists.

The effects of other possible covariates were not computed, again due to incomplete data, and the resulting small d.f. Such possible covariates include I.Q. score, length of baseline, marital status, attained level of education, and pretest scores on MMPI clinical scales. All of these factors may have influenced subject data, but to what extent cannot be ascertained from the data for this study. Further investigations might shed light upon what effects such covariates have upon the cognitive-behavioral treatment of depression.

Concerning the effects of the length of the baseline upon subjects' performance, over all subjects the length of their baseline phase does not appear to have affected their performance differentially. Inspection of the subjects' data for the baseline condition on each of the four daily measures yielded no systematic differences between subjects in the 7-, 10-, or 14-day baseline groups. Descriptions of the

median trends for all subjects' baseline performance are summarized as Table 7. As was mentioned, due to insufficnent data, analysis of variance with length of baseline as a covariate could not be run. Thus, the data do not suggest systematic differences in subjects' performance due to the length of the baseline condition or due to any cyclical changes in depression which may occur independent of treatment.

MMPI

Although the MMPI was not a measure of primary research interest, it was useful as a screening instrument. Decisions could be made with the MMPI providing data in addition to clinical perceptions and client self-report. The MMPI was an economical measure in that it required little time of the investigator to obtain each subject's profile. Administration time was low, generally less than five minutes to direct the subject in responding to the items and to answer preliminary questions. Scoring each MMPI protocol was performed by clerical personnel, taking about 10 minutes per protocol. The investigator could interpret the resulting MMPI profile in a matter of a few seconds and decide whether the subject's profile fit the study criteria. The cost of a test administration was low, approximately five cents per score sheet, and the MMPI booklet (Form R) was reusable. Thus, in terms of

Table 7

Descriptions of Median Trends of Baseline Performance on Four Dependent Measures of Depression

Baseline Length	Subject	Beck Depression Inventory	BRS Depression	BRS Psychomotor Retardation	BRS Social Interest
7-day	1	horizontal	decreasing	horizontal	increasing
	4	decreasing	decreasing	decreasing	increasing
	5	decreasing	decreasing	horizontal	increasing
10-day	2	increasing	decreasing	decreasing	increasing
	3	increasing	increasing	increasing	decreasing
	7	increasing	horizontal	increasing	increasing
	8	decreasing	decreasing	decreasing	horizontal
14-day	6	horizontal	decreasing	horizontal	horizontal
	9	horizontal	increasing	horizontal	increasing
	10	decreasing	increasing	increasing	increasing
	11	decreasing	decreasing	decreasing	decreasing

investigator time and expense, the use of the MMPI was a real bargain. It does consume the subject's time to take the MMPI, usually one to two hours, and this is a consideration. With the exception of one, all subjects completed two MMPI protocols during this study, and none reported strong aversion to doing so. Some subjects even reported that they enjoy taking tests, and asked this investigator if they could complete other tests.

In addition to the great economy of the MMPI, and its utility as a screening device, the instrument was sensitive in detecting pre-posttreatment differences for individual subjects and for group mean performances. As indicated previously, there were statistically significant reductions in subjects' scores on Scales 2 and 7, the scales of most interest. Although there were no changes in MMPI scores hypothesized, the reduced profiles over the experimental period add support to the notion that something desirable took place during this time period with these depressed subjects. The MMPI results do not indicate what specifically happened to lower the posttest scores, but in addition to the daily repeated measures indicate an overall reduction in self-reported depression.

Interrater Reliabilities

The interrater reliabilities reported for the BRS variables vary greatly between clients, and overall are not as high as reported by other investigators and not as high as might be desirable in this study. As reported in Table 6, the mean interrater reliabilities for the BRS variables are Depression, .344; Psychomotor Retardation, .163; and Social Interest, .399. The Depression items have to my knowledge never before had interrater reliabilities computed for them. However Lentz et al. (1971) reported interrater reliability coefficients for Psychomotor Retardation of .83 and for Social Interest of .95. Looking on the negative side, there was considerably less agreement between raters during the present than in previous studies. This is probably due to small number of subjects, relative lack of sophistication of raters, perceptual biases of clients rating their own performance, and of raters rating the performance of friends or loved ones. Additionally, ratings took place over a variety of different locations and situations.

On the positive side, ratings and raters could not be highly controlled in this "real-world" study. Raters were psychologically naive, relatively untrained, unpaid, and sometimes emotionally involved with clients. Ratings were made for a client by one rater in one

situation, and by a different rater in perhaps an entirely different situation. Thus, high interrater agreement could not be expected. It could be argued that given the constraints of this study, the interrater reliabilities obtained are respectable.

It may also be noted that the interrater reliability coefficient obtained in this study for Depression, .344, compares favorably to the reliability obtained for Social Interest, .399. Because in previous studies respectable interrater reliability was obtained for Social Interest, perhaps in a more controlled rating environment a more desirable coefficient would also be obtained for the Depression variable.

Although the interrater reliabilities obtained for the BRS measures are undesirably low, the reliabilities of the measures are not necessarily low. The interrater reliabilities are obtained comparing ratings across raters across situations. That there is not high interrater agreement does not mean that the measures are unreliable; highly reliable measures could yield poor interrater-intersituation reliabilities. Honigfeld (1974) does not specify test-retest stability coefficients for his NOSIE-30 factors, but low reliabilities for the three behavioral measures of this study may not be inferred from the interrater reliabilities obtained.

Likewise, the validities of the measures are not necessarily weakened by the low interrater reliability findings. The measures could be extremely valid for purposes of rating depressive behaviors, and yet across situations different scores may be obtained.

As a way of guarding against spurious results obtained from data with low interrater agreement, individuals' repeated behavioral measures represent mean scores of ratings each day on BRS Depression items, Psychomotor Retardation factor, and Social Interest factor. Even though daily ratings on each of the measures may differ for whatever reasons, the mean daily score should be the best estimate of the true daily score.

A final support that the mean reliabilities for the BRS variables are within acceptable limits is the overall results obtained from their use in this study. Statistically significant changes in the predicted directions were obtained for the research hypotheses involving the three BRS variables. It could be argued that unless the measures possessed adequate reliability, changes between phases would not have been detected. Data would have been randomly distributed across all phases, and there would have been no statistically significant differences.

Although the mean interrater reliability coefficients for the BRS variables Depression, Psychomotor Retardation, and Social Interest are disappointingly low, there are coefficients for some subjects on some measures which are promising. Perhaps further investigations under more controlled situations will obtain more consistent and higher interrater reliability values. Perhaps also, other investigators will develop behavioral measures better suited for repeated self- and other-ratings of depression in the natural environment.

Implications

The results of the present study suggest implications for the theory and treatment of depression and for further refinements in research. It has been shown that the data support 11 of 12 research hypotheses at the $\alpha = .05$ level. In turn these research hypotheses lend support to Beck's assumptions regarding the treatment of depression. Such support may be viewed as verification which is additional to, and independent of, Beck's own research. External verification of assumptions is crucial to theory-building, and the data of this study bolster and affirm Beck's assumptions regarding a cognitive theory and treatment of depression. Beck's two important assumptions regarding treatment are

supported: that a cognitive treatment will decrease depressive emotions; and that behavioral correlates of depressive emotions will likewise be reduced.

To a certain degree, the results of this study have implications for Seligman's theory of learned helplessness. To the extent that learned helplessness in humans is a cognitive phenomenon, and to the extent that learned helplessness is equivalent to depression, a cognitive treatment may be effective in ameliorating learned helplessness in humans. That is, by directly attacking the cognitions of learned helplessness, the condition should be lessened.

Implications for the treatment of depression are many. The present study was performed primarily in an outpatient community mental health center. Subjects were agency clients who met certain selection criteria. They were a population of individuals diverse in terms of education, marital status, family income, age, and motivation level. Findings from this study certainly may be generalized to similar depressed individuals who are clients of community agencies and clinics elsewhere.

The procedures employed in this study may be easily adapted for use in other settings by other clinicians. Testing materials are inexpensive to obtain, and time-economical to use. Training of

therapists was short-term, and did not require highly experienced clinicians. Materials used in training therapists are quite inexpensive and easily obtained.

The treatment intervention is straightforward and well-received by most depressed clients. The cognitive-behavior modification of depression "makes sense" to clients, and many of them wonder why they have never received this kind of help before. Upon reading the pamphlet "Coping with Depression" (Beck & Greenberg, 1974) some clients exclaimed that the book described their problems with amazing accuracy.

The rating procedures are applicable to field settings. It is often not feasible or desirable to follow clients around their natural environment observing behavior. For all the faults of the procedure, enlisting significant others in rating client behaviors was useful in assessing treatment effectiveness. As the saying goes, "Some data are better than none at all!" The rating materials were prepared inexpensively, and data may be collected with a minimal expenditure of a clinician's time. Clerical, volunteer or student personnel could be enlisted to do much of the data collection and charting.

The N = 1 statistical approach is conceptually straightforward, and the clinician can look at the data and receive immediate feedback regarding client progress.

Although in this study the treatment package was specified and constant, in an agency setting the treatment may be modified according to client performance indicated by the graphs of repeated measures.

The statistics used in this study are readily applicable to small samples for which more traditional statistical analyses may not be appropriate or possible. Likewise, control groups of similar subjects are unnecessary, because in the intensive case design, each subject becomes his own control. In addition to the practical advantages of such a design, the ethical issues of which clients get the real treatment and which are assigned to a control condition are resolved; no client is assigned to a control group. All clients are continually monitored during baseline, and they may be placed in treatment if necessary. By appropriately designing the research phases, between-phase comparisons may be made and inferences may be drawn as to the efficacy of treatment.

As much as possible, this study was designed to meet the demands and constraints placed upon clinicians currently working in applied settings. Using therapists who received only two sessions of training in the cognitive treatment of depression, a specified treatment was delivered. The treatment was administered during four sessions over a two-week period to clients of an

outpatient clinic. Client ratings were obtained on several measures of depression which are readily available, relatively economical in cost, and efficient of time to use. Given all these considerations, the treatment was still shown to be effective in the alleviation of depression in outpatient females. This cognitive-behavior modification of depression was designed to have applicability to the practices and needs of mental health workers, and apparently that goal was attained.

Although the clients who received treatment in this study were adult female outpatients, there are no apparent reasons why cognitive-behavior modification would not be helpful to depressed clients in other settings. For example, the treatment package is easily applicable to a public school setting. In fact, two of the therapists in this study report success in using the treatment procedures with adolescent clients in junior high school counseling settings. I have perceived that depressed medical inpatients respond to cognitive-behavior modifications, and in particular that depression which is secondary to medical conditions or physical disabilities may be decreased.

A great number of medical outpatients are depressed, and probably no group of human service professionals sees more depressed individuals than do

physicians. A busy physician could be taught the principles and practice of cognitive-behavior modification of depression in a relatively short time, perhaps during a one-day workshop. The physician could thereafter use cognitive-behavioral strategies with depressed patients seen in his office. A good number of patients would probably respond favorably, and psychiatric referrals and/or the use of psychotropic agents could be reserved for the more severe and intractable cases.

Cognitive-behavior modification is applicable to institutionalized clients also. For instance, psychiatric inpatients who are depressed could respond favorably to this treatment so long as they are verbal, at least normally intelligent, lucid, in touch with reality, and motivated to help themselves. Of course, similar constraints apply to most "talk therapies." Clients in corrections institutions with these positive attributes might also respond to cognitive-behavior therapy.

Certainly research is in order which tests the applicability of cognitive-behavior modification to other individuals in a variety of settings. Cognitive-behavior modification is certainly not a panacea. It is but another treatment modality which shows promise of success with some types of clients with some types of problems. As with any promising technique, further investigation and refinement are warranted.

Although this study has not been emphasized as a study of behavioral self-management strategies, there are implications which may be drawn. Subjects were assisted in generating lists of rational (i.e., non-depressing) cognitions in one session and lists of positive self-evaluatory statements in the next, and in making high probability behaviors contingent upon the reading of the lists. Essentially, subjects were placed in charge of their own treatment. As in the self-management literature cited in Chapter I, this behavioral technique was apparently successful in decreasing depressive cognitions and the consequential emotions and behaviors. Several clients reported using the behavioral self-management techniques from time to time after the termination of treatment, whenever they "had a bad day." The two self-management techniques used, self-reinforcement of reading anti-depression statements and self-reinforcement of reading positive self-evaluatory statements, were combined in this treatment package. Further investigations might compare the two techniques to find differential effects of the two strategies upon depression.

In this study cognitive-behavioral self-management techniques were effective in decreasing depression. Two other treatments described in Chapter I have shown much success with depression; these techniques are the cognitive treatment of Aaron Beck and the behavior

modification of Peter Lewinsohn. The cognitive-behavior therapy employed in this study owes heavily to those cognitive and behavioral treatments of depression, and may be considered to be a logical hybrid of the two different, but successful approaches. Additionally, I have received materials, assistance, and encouragement from Beck (1975) and from Lewinsohn (1975). An obvious research study would compare the efficacies of the three successful treatments of depression--cognitive, behavioral, and cognitive-behavioral. From such research, perhaps the most powerful components, or combination of components, of the treatments would be evident.

Regardless of which treatment, or treatments, emerge as most successful in treating of depression, mental health professionals may at last have treatment strategies at their disposal which will assist clients in decreasing depression and even preventing its recurrence. Such a promise is exciting to those who work each day with depressed clients, as well as to theoreticians and researchers.

APPENDICES

APPENDIX A

BDI QUESTIONNAIRE

APPENDIX A

BDI QUESTIONNAIRE

NAME_____DATE_____

In each group of statements, please circle the letter in front of the statement that best describes how you feel right now.

If two or more statements are true, circle the latter statement in the group.

Be sure to read all the statements in the group before making your answer.

1. a I do not feel sad.
   b I feel blue or sad.
   c I am blue or sad all the time and I can't snap out of it.
   d I am so sad or unhappy that it is quite painful.
   e I am so sad or unhappy that I can't stand it.

2. a I am not particularly pessimistic or discouraged about the future.
   b I feel discouraged about the future.
   c I feel I have nothing to look forward to.
   d I feel that I won't ever get over my troubles.
   e I feel that the future is hopeless and that things cannot improve.

3. a I do not feel like a failure.
   b I feel I have failed more than the average person.
   c I feel I have accomplished very little that is worthwhile or that means anything.
   d As I look back on my life all I can see is a lot of failure.
   e I feel I am a complete failure as a person (parent, husband, wife).

4. a I am not particularly dissatisfied.
   b I feel bored most of the time.
   c I don't enjoy things the way I used to.
   d I don't get satisfaction out of anything anymore.
   e I am dissatisfied with everything.

5. a I don't feel particularly guilty.
   b I feel bad or unworthy a good part of the time.
   c I feel quite guilty.
   d I feel bad or unworthy practically all the time now.
   e I feel as though I am very bad or worthless.

6. a I don't feel I am being punished.
   b I have a feeling that something bad may happen to me.
   c I feel I am being punished or will be punished.
   d I feel I deserve to be punished.
   e I want to be punished.

7. a I don't feel disappointed in myself.
   b I am disappointed in myself.
   c I don't like myself.
   d I am disgusted with myself.
   e I hate myself.

8. a I don't feel I am any worse than anybody else.
   b I am critical of myself for my weakness or mistakes.
   c I blame myself for my faults.
   d I blame myself for everything bad that happens.

9. a I don't have any thoughts of harming myself.
   b I have thoughts of harming myself but I would not carry them out.
   c I feel I would be better off dead.
   d I feel my family would be better off if I were dead.
   e I have definite plans about committing suicide.
   f I would kill myself if I could.

10. a I don't cry any more than usual.
    b I cry more now than I used to.
    c I cry all the time now. I can't stop it.
    d I used to be able to cry but now I can't cry at all even though I want to.

11. a I am no more irritated now than I ever am.
    b I get annoyed or irritated more easily than I used to.
    c I feel irritated all the time.
    d I don't get irritated at all the things that used to irritate me.

12. a I have not lost interest in other people.
    b I am less interested in other people now than I used to be.

c I have lost most of my interest in other people and have little feeling for them.
d I have lost all my interest in other people and don't care about them at all.

13. a I make decisions about as well as ever.
b I try to put off making decisions.
c I have great difficulty in making decisions.
d I can't make any decisions at all anymore.

14. a I don't feel I look any worse than I used to.
b I am worried that I am looking old or unattractive.
c I feel that there are permanent changes in my appearance and they make me look unattractive.
d I feel that I am ugly or repulsive looking.

15. a I can work about as well as before.
b It takes extra effort to get started at doing something.
c I don't work as well as I used to.
d I have to push myself very hard to do anything.
e I can't do any work at all.

16. a I can sleep as well as usual.
b I wake up more tired in the morning than I used to.
c I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
d I wake up early every day and can't get more than 5 hours sleep.

17. a I don't get any more tired than usual.
b I get tired more easily than I used to.
c I get tired from doing anything.
d I get too tired to do anything.

18. a My appetite is no worse than usual.
b My appetite is not as good as it used to be.
c My appetite is much worse now.
d I have no appetite at all anymore.

19. a I haven't lost much weight, if any, lately.
b I have lost more than 5 pounds.
c I have lost more than 10 pounds.
d I have lost more than 15 pounds.

20. a I am no more concerned about my health than usual.
b I am concerned about aches and pains or upset stomach or constipation.

c I am so concerned with how I feel or what I feel that it's hard to think of much else.
d I am completely absorbed in what I feel.

21. a I have not noticed any recent changes in my interest in sex.
b I am less interested in sex than I used to be.
c I am much less interested in sex now.
d I have lost interest in sex completely.

THANK YOU FOR YOUR COOPERATION!

APPENDIX B

BEHAVIOR RATING SCALE

APPENDIX B

BEHAVIOR RATING SCALE

CLIENT'S NAME_____DATE _____

RATER'S NAME _____RELATIONSHIP TO CLIENT_____

DIRECTIONS

Please count this person's behavior as you observed it today only. Indicate your rating by filling one block for each item:

Never	Once	Twice	Three times	Four times or more		
0__	1__	2__	3__	4__	1.	Cries.
0__	1__	2__	3__	4__	2.	Enters into activities around him which involve other people.
0__	1__	2__	3__	4__	3.	Sits, unless directed into activity.
0__	1__	2__	3__	4__	4.	Tries to be friendly with others.
0__	1__	2__	3__	4__	5.	Refuses to speak.
0__	1__	2__	3__	4__	6.	Laughs or smiles at funny comments or events.
0__	1__	2__	3__	4__	7.	Starts a conversation with others.
0__	1__	2__	3__	4__	8.	Says he feels blue or depressed.
0__	1__	2__	3__	4__	9.	Talks about his interests.
0__	1__	2__	3__	4__	10.	Sleeps, unless directed into activity.
0__	1__	2__	3__	4__	11.	Says he is no good.
0__	1__	2__	3__	4__	12.	Is slow-moving or sluggish.

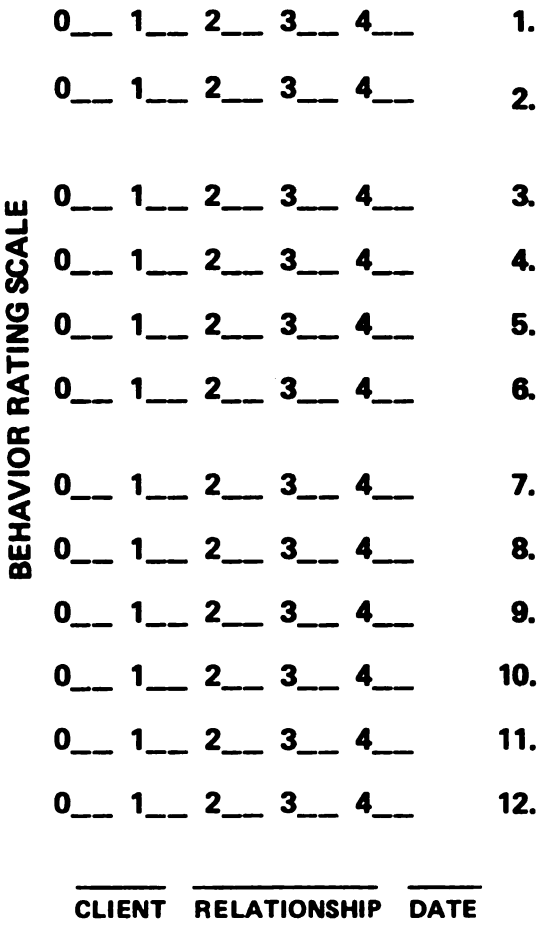
Thank you for your assistance.

APPENDIX C

DAILY RATING CARDS

APPENDIX C

DAILY RATING CARDS



BDI QUESTIONAIRE

INITIAL'S_____ DATE_____

Please fill in blanks with letter:

1_____	**8_____**	**17_____**
2_____	**9_____**	**18_____**
3_____	**10_____**	**19_____**
4_____	**11_____**	**20_____**
5_____	**12_____**	**21_____**
6_____	**13_____**	
7_____	**14_____**	
	15_____	
	16_____	

Comments?

APPENDIX D

COGNITIVE TARGETS

APPENDIX D

COGNITIVE TARGETS

B. Cognitive Targets Symptom	Reasons of Maladaptive Attitude	Therapeutic Rationale	Therapeutic Technique
1. Suicidal Wishes	1. No point to living; Too miserable-escape; Burden to others-It will be Endless; Can't Get What I Want.	1. Suicide is irreversible act let's see if really sure before doing it. -Will suicide get what you want?	1. -Expose Ambivalence -Scrutinize "Reasons to Die" -Alternative Therapy a. Alternative Ways to View Problems b. Alternative Actions
2. Hopelessness-Exaggerated View of Difficulties.	2. Nothing Will Work Out Right (similar to suicidal reasons).	2. When depressed people feel unrealistically pessimistic. Let's see why feel so hopeless.	2. -Empirical Demonstration of Fallacy/of Negative Predictions. -Question Reasons: "How So Sure." -"What if" Technique
3. Lack of Gratification	3. I can't enjoy anything.	3. -Do you really enjoy nothing or are some things less painful than others? -You're too hard on self and not getting enough goodies.	3. -M&P Therapy to see if discrediting self. -Behavioral Assignments of slightly enjoyable activities.
4. Self-Criticism Self-Hate	4. -Believes he causes all bad things -Measures Self Value by Results -Tyranny of Shoulds	4. -Being too hard on self. -Discrediting good things, too.	4. -Dysattribution -Modify "shoulds"
5. Indecisiveness	5. No decision I make is right.	5. Making any decision even if imperfect will feel better.	5. -Alternative Therapy. -"What if" Technique to decatastrophize consequences of decision.

From Beck, A. T., & Rush, J. The treatment manual for cognitive-behavioral treatment of depression. Unpublished manuscript. Philadelphia: University of Pennsylvania, 1974, p. 9. Reproduced by permission.

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