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Success only and attribution retraining in the alleviation of depression and learned helplessness.

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SUCCESS ONLY AND ATTRIBUTION RETRAINING IN THE ALLEVIATION OF DEPRESSION AND LEARNED HELPLESSNESS

A Dissertation Presented

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LINDA JANE SOBELMAN

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D E D I C A T I O N

To My Father, Edgar Sobelman.

He always respected and supported
the intellectual, striving side of me and
would have been proud to see this work completed.

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ABSTRACT

Success Only and Attribution Retraining in the Alleviation of Depression and Learned Helplessness

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Theory in the area of learned helplessness postulates that depression reflects a belief that actions and consequent events are causally unrelated. The affective and motivational disturbances associated with depression are believed to result from this primary cognitive distortion. Therapy analogue studies have demonstrated that mastery experiences will reverse the performance deficits associated with depression and learned helplessness. Related research has demonstrated that training helpless children to take responsibility for failure and to attribute it to a lack of effort results in improved ability to cope with future failure.

Other researchers in the area of depression have argued that depression reflects an exaggerated belief in one's responsibility for negative outcomes, rather than a

belief in response-outcome independence. Based on the theory that depression reflects an exaggerated sense of personal blame, the present study postulated that a training procedure which augments belief in personal responsibility for events would exacerbate the depressive's tendency toward self-blame for failure and would have a negative effect on subsequent performance. In order to test the difference between these two models of depression, the present study examined the effects of mastery experiences and attribution retraining on depression and learned helplessness.

The experiment was conducted in three phases. In the first phase, nondepressed subjects were divided into three groups: a control group, a group exposed to escapable noise, and a group exposed to inescapable noise. In the second phase, depressed subjects, and the nondepressed subjects pretreated with inescapable noise were given either mastery experiences, attribution retraining or no treatment. In the third phase, all subjects were tested on an anagram task.

Three major findings emerged: failure to replicate the helplessness effects demonstrated in previous studies; the finding that the performance of depressed control subjects was equivalent to that of nondepressed control subjects

whereas, following treatment the performance of the depressed subjects was inferior; and the finding of sex differences in attribution for success and in reaction to the two treatment procedures.

Results were interpreted from an attribution theory framework. It was suggested that females have a characterological bias toward self-depreciation which renders them vulnerable to depression given unfavorable life circumstances. Training which augments belief in personal responsibility was found to be counterproductive for depressed and nondepressed females. Depressed males, on the other hand, responded well to attribution retraining. It was suggested that, for males, depression reflects a temporary diminution of self-esteem and that self-produced success restores self-confidence.

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INTRODUCTION

Depression

In the study of depression cognitive processes have traditionally received little attention. The definition of depression in the American Psychiatric Association DSM-II reflects this viewpoint: depression is classified as an affective disorder while any concurrent thought disturbance is relegated to a position secondary to the mood disorder.

Reflecting the traditional approach to depression, analytic theories emphasize the motivational-affective experience of loss in the dynamics of depression. Stemming from Freud's (1917) contrasting of depression with normal grief, analytic models present depression as the reaction of an oral dependent individual to the real or fantasized loss of narcissistic supplies. The loss leads to regression to oral fixation and subsequent oral incorporation of the lost object. Efforts to regain self-esteem by acquiring narcissistic supplies from the introjected object involve turning the object-directed aggression toward oneself.

Behavioral approaches to the problem of depression

have also generally focused on the importance of loss in the precipitation of depression. S-R theorists view depression as a function of inadequate or insufficient reinforcers following the withdrawal of some source of reinforcement that has been significant to the individual. The depressed individual is seen as being on a virtual extinction schedule and consequently showing a weakened behavioral repertoire.

Lazarus (1968) defines loss rather broadly to include abstract concepts as well as concrete objects. Thus, the loss may be of money, love, status, prestige, recognition, security, or bodily functioning.

Ferster (1973) points out that the withdrawal of reinforcement which precipitates a depression may be a consequence of diverse factors such as (a) sudden environmental changes, (b) punishment and aversive control, and (c) shifts in reinforcement contingencies.

Some behavioral theorists (Ullman and Krasner, 1969; Lazarus, 1968; Burgess, 1968) suggest that, while depression is precipitated by loss, depressive behaviors may be maintained by positive reinforcement. They assert that the depressed person is reinforced by the sympathy and attention of others. Lewinsohn et al. (1968), however, recognize that sympathy and attention for depression is at best short-lived and is, in the long run, outweighed by the aversive

consequences of annoyance with and avoidance of the depressed person by others. Lewinsohn et al. maintain that withdrawal on the part of others further decreases the rate of positive reinforcement received by the depressed individual, resulting in a further accentuation of depression.

Lewinsohn et al. propose a treatment program for depression that follows from the behavioral analysis of depression outlined above. Its main goal is the restoration of an adequate schedule of positive reinforcement for the depressed individual by training him/her to emit behaviors which are likely to be positively reinforced, and by encouragement for engaging in activities which are inherently reinforcing.

Research investigations associated with this program (Lewinsohn and Libet, 1972; Lewinsohn and Graf, 1973) have examined the relation between self-reported depression and amount of reinforcement. Amount of positive reinforcement was measured by counting the number of pleasurable activities in which subjects participated. These researchers found a positive correlation between self-reported mood and activity level. Difficulty in interpretation of the data arises, however, because the direction of causality is unclear from these correlational studies.

An obvious question is why the depressed person does

not initiate behaviors which are more likely to provide new sources of reinforcement. Lewinsohn suggests that lack of social skills is a particularly important factor in distinguishing between those people who will seek out new sources of reinforcement and those people who will become depressed. Lewinsohn, however, provides no data to support this view of the depressive as lacking in skills.

A clue may be provided by recent investigations by Hammen and Glass (1975). Using an experimental methodology, rather than the correlational design employed by Lewinsohn and his colleagues, these researchers found that inducing depressed subjects to increase their participation in events they had previously rated as being pleasurable did not alleviate depressed mood. They further demonstrated that subjects who engaged in more of the pleasurable activities actually rated the events less positively than did subjects in groups that did not increase their activity levels. The authors caution against a behavioral focus on overt acts and their consequences which may overemphasize environmental events at the expense of cognitive mediational factors. They suggest that:

> availability of reinforcers and skills to obtain or elicit them count for little if the depressed person does not anticipate that his acts will benefit him, or if he minimizes the positive consequences of his behaviors (p. 720).

Thus, the authors suggest we look to cognitive processes to help understand why some persons react to loss by becoming depressed, while others find new sources of reinforcement.

Ferster resorts to what he calls "mentalistic descriptions" in order to account for the fact that the depressed person does not engage in activities which are in his/her repertoire and which are potential sources of reinforcement. He cautions that we cannot assume that the depressed person actually sees very many of the features of the surrounding social world. The depressed person has a distorted, incomplete, and misleading view of the environment. Behaviorally, this may be manifested by:

> hallucinations and delusions, distortions of body image and physical appearance, distortions of the depressed person's competence, exaggeration of errors, complete inability to evaluate the way other people see him, a tendency to take the blame for events for which there really is no responsibility, and a limited and hopeless view of the world (p. 861).

Ferster maintains that the depressed person has learned a primitive, atavistic mode of responding to frustration which includes an increase in avoidance and escape activity such as complaints, crying and irritability. This mode of reacting to frustration blocks enlargement of the person's perception of the world because the diffuse emotional responses are prepotent over the subtler nuances of a

normal interaction. Were more effective methods of avoiding aversive situations available to the depressed person, they would become prepotent over the less effective, simpler, and more primitive ones. Ferster concludes that the treatment of depression should focus on increasing the cognitive repertoire by teaching the person to observe appropriate features of the environment. The goal would be to increase the person's tendency to act positively on the environment rather than to react passively and emotionally.

Seeds of a cognitive viewpoint are also evident in recent ego-analytic models of depression. Bibring (1953) suggests that the key mechanism of depression is the ego's awareness of its helplessness in regard to its aspirations. Oral fixation or regression may represent one of the most common forms of depression (because of the infant's real lack of power and dependence on others to meet its needs), but is is not the core mechanism. Bibring asserts that depression is a state of the ego which may occur at any stage of ego-development. The defining characteristics of depression are the ego's awareness of its inability to attain desired goals and the maintenance of the importance of those goals. Bibring believes that this mechanism represents the core of normal, neurotic, and probably also psychotic depression.

A very similar viewpoint is expressed by Melges and Bowlby (1969). They suggest that feelings of hopelessness underlie many forms of psychopathology and that this feeling is a result of discrepancies between plans and goals. In the case of depression, they maintain that:

> while a depressed patient's goals remain relatively unchanged, his estimate of the likelihood of achieving them, and his confidence in the efficacy of his own skilled actions are both diminished (p. 694).

Some experimental support for the importance of hopelessness and helplessness in the phenomena of depression is provided by Melges and Weisz (1971). Using a soliloquy technique, these researchers found that suicidal ideation is associated with a negative outlook on the personal future, with a feeling of lessened personal control over outcomes and with a diminished future time perspective.

In a series of writings (1963, 1967, 1970, 1971), Beck details a comprehensive cognitive model of psychopathology with special attention to the cognitive processes associated with depression. Beck maintains that the inappropriate or excessive emotional reaction which characterizes psychopathology is a function of idiosyncratic conceptualizations of events. Whereas in normal functioning, the perception-cognition-emotion sequence is largely dictated by the demand characteristics of the situation, in psychopathological functioning the conceptualization of the stimulus

situation is determined to a greater extent by internal processes. Beck describes the content of depressive cognitions as reflecting a cognitive triad: a negative conception of the self, a negative interpretation of life's experiences, and a nihilistic view of the future. The depressed patient:

> perceives that he has irretrievably lost something that he considers essential to his happiness or tranquility; he expects negative outcomes from any important endeavors that he undertakes; and he regards himself as deficient in those attributes necessary for attaining important goals (Beck, 1971, p. 498).

Some experimental evidence has appeared in the literature in support of Beck's thesis that typical themes are predominant in the thinking of depressed persons (Beck and Ward, 1961; Beck and Hurvich, 1959), that negative evaluations of performance and negative expectations of the future are a part of the depressive constellation (Loeb et al., 1967; Friedman, 1964) and that cognitive distortions occur in relation to these content areas (Hammen and Krantz, 1976).

Cognitive factors constitute a central role in the model of depression recently proposed by Seligman (1975), the learned helplessness model. Since this model is critical to the present investigation, a detailed presentation of the paradigm used to test this model follows.

Learned Helplessness

Animal studies. In the typical helplessness study, dogs are pretreated with inescapable shock. This procedure involves restraining the dogs in a Pavlovian hammock and administering a series of shocks. The shocks are not preceded by any signal and they occur randomly in time. No response the animal makes can influence the onset, offset, duration, or intensity of the shocks.

Following this pretreatment, the dogs are placed in an escape-avoidance situation within a two-way shuttlebox. The shuttlebox consists of two compartments separated by a shoulder high barrier. The onset of a signal (a light dimming) marks the beginning of each trial, and the signal continues until the end of the trial. The animal can terminate the trial at any time by jumping over the barrier from one compartment into the other. Shocks are administered alternately in each compartment so that no one place is always safe, but the response of jumping from one compartment to the other leads to safety. Jumping the barrier during the ten-second interval preceding the onset of shock terminates the signal and prevents shock. If the dog fails to jump during the preshock interval, a shock is administered. The shock continues either until the dog jumps the barrier or until 60 seconds have elapsed

since the onset of the signal, at which time the trial ends automatically.

A naive dog (i.e., a dog not given pretreatment with inescapable shocks) given escape-avoidance training in a shuttlebox shows a typical behavior pattern. At the first onset of the presignaled shock, the dog runs frantically about the compartment, howling, urinating and defecating. This behavior continues until the dog accidentally scrambles over the barrier and escapes the shock. Over subsequent trials, the emotional behavior subsides and the animal becomes increasingly more efficient at escaping shock, until it learns to avoid shock altogether. However, the behavior of animals that have been pretreated with inescapable shock is strikingly different. Seligman reports that these dogs react initially like the untreated animals. After a short period of time, however, the pretreated animals give up running, lie down and quietly whine until the shock terminates. On subsequent trials, the animals continue to passively sit and accept the shocks. Occasionally these animals will jump over the barrier early in training and escape the shock. They seem unable to profit, however, from exposure to the barrier-jumping shock-termination contingency. On subsequent trials the animals fail to repeat the escape response and passively wait out the shock.

Seligman uses the term learned helplessness to describe the behavior of these pretreated animals and also to refer to the process that is believed to underlie the phenomenon. He suggests that during the pretreatment with uncontrollable shock, the animal learns that shock termination occurs independently of all of its voluntary responses, i.e., that there is nothing it can do to control the shock. Seligman proposes that the experience of uncontrollability has motivational and emotional, as well as cognitive consequences. The expectation that outcomes are independent of responding generalizes to new situations, producing proactive interference with later learning of response-reward contingencies. The belief in uncontrollability undermines the motivation to initiate responses, resulting in decreased efforts to obtain control in later situations.

It is important to emphasize that the learned helplessness effects are hypothesized to be the result of a cognitive representation, that is, the expectation of response-outcome independence may or may not correspond to actual objective contingencies. Conversely, mere exposure to the contingency is not sufficient: the organism must form the expectation that outcomes and responding are independent in order for helplessness to occur.

The emotional reaction to the perception of uncontrollability follows a time course wherein the initial reaction

is one of fear. This state continues until the organism either learns that it can control the trauma or that there is nothing it can do to change the situation. When the organism learns that stress can be controlled, fear diminishes or may disappear altogether. If, on the other hand, the organism, learns that it cannot control the stress, fear decreases and is replaced with depression.

The learned helplessness model has generated considerable research designed to test corollaries of the theory and to respond to criticisms and alternative interpretations of findings. In particular, by use of a triadic design, Seligman and Maier (1967) demonstrated that it is not shock itself, but learning that shock is uncontrollable, that causes helplessness. In this experiment, three groups of dogs were used. One group was pretreated with shock that could be escaped by pressing a panel with their noses. A yoked group received shocks identical in number, duration, and pattern to the shocks given to the escape group; however, no response they made could control the shock. The third group was not given any pretreatment. In later escape-avoidance training in the shuttlebox, the yoked group was significantly slower to respond than the escape and control groups. Therefore, helplessness was demonstrated to be a function of the experience of uncontrollability rather than mere exposure to aversive stimuli.

The helplessness response has been demonstrated in species other than dogs, including cats, fish and rats (see Seligman, 1975, for a comprehensive review).

Human studies. Investigators have also demonstrated the helplessness response in man. These studies parallel the animal helplessness paradigm by pretreating subjects with uncontrollable outcomes in the form of inescapable shock, inescapable noise, or unsolvable cognitive problems. Following pretreatment, the subjects are tested on a potentially solvable task and their performance is compared to that of subjects given prior experience with controllable outcomes and subjects given no prior experience. Human helplessness is demonstrated if the group given pretreatment with uncontrollable outcomes shows performance deficits on the test task relative to the other two groups.

In a critical review of the human helplessness studies, Wortman and Brehm (1975) have argued that many of the studies that purport to demonstrate human helplessness effects have serious methodological problems, or plausible alternative explanations. The methodological problems generally take the form of failure to include appropriate control groups. As discussed previously, it is necessary to employ the triadic design devised by Seligman and Maier (1967) in order to demonstrate that exposure to uncontrollable

outcomes (rather than mere exposure to aversive stimuli) results in later learning deficits. In addition, finding that groups given controllable outcomes perform better than groups given uncontrollable outcomes does not demonstrate helplessness. Wortman and Brehm caution that without a control group that has not received helplessness training, such a comparison confounds the possibility that prior experience with control results in facilitated performance with the possibility that prior experience with lack of control leads to performance decrements.

Thornton and Jacobs (1971), for example, found that subjects who were able to control aversive stimulation during training performed significantly better than subjects who were given pretreatment with uncontrollable aversive stimuli and subjects given no pretreatment. The latter two groups did not differ from one another. While the authors claimed that their results demonstrated helplessness effects in humans, it would be more accurate to conclude that their results indicated that experience with control in the training session facilitated performance in the test session.

The results of Thornton and Jacobs' study could actually be seen as damaging to the helplessness model, since the group given pretreatment with uncontrollable aversive stimuli did not, in fact, perform worse than the

untreated control group. Klein (1975), however, points out that procedural differences between Thornton and Jacobs' study and the original animal helplessness studies render interpretation of results difficult. During the training task, Thornton and Jacobs explicitly told subjects whether or not the shock would be avoidable and, for those subjects who could avoid the shock, exactly what they had to do to avoid it. Thornton and Jacobs speculated that the control subjects performed as poorly as they did because they were the only subjects not given explicit instructions during training. Consequently, the possible confounding of instructional set and inescapable pretreatment cannot be discounted.

An early attempt by Fosco and Geer (1971) to demonstrate learned helplessness with human subjects suffers from the first methodological flaw discussed above: in this study, the more experience with lack of control a subject had, the more shocks s/he received, thereby confounding these two variables.

A similar problem exists with Hiroto's (1974) study of human helplessness. Hiroto did include control groups by giving subjects pretreatment with either escapable, inescapable or no noise on a button-pressing training task before testing all subjects in a human analogue to the animal shuttlebox. Subjects in the escape and no es-

cape conditions, however, were not yoked for pattern and duration of exposure to noise. Consequently, subjects in the escape condition were exposed to considerably less noise than those in the no escape condition, thereby confounding amount of exposure to aversive stimuli with uncontrollability of aversive stimuli, making interpretation of the results difficult.

Despite the methodological problems of the above experiments, however, a number of other studies have been successful in demonstrating learned helplessness in man (for example, Miller and Seligman, 1975; Klein and Seligman, 1976; Hiroto and Seligman, 1975). In addition, Hiroto and Seligman demonstrated that helplessness transfers from instrumental tasks to cognitive tasks and that insolubility as well as inescapability engenders the expectancy that responding is independent of reinforcement. These findings regarding the generality of learned helplessness led the authors to suggest that the process induced by uncontrollability may be the rudiment of a "trait".

The issue of generalization is one that is discussed at length by Wortman and Brehm. These authors contend that in many of the human helplessness studies a concept such as set can explain the fact that subjects who experience lack of control during pretreatment will continue to assume that the testing situation is uncontrollable, while

subjects who have experienced control during pretreatment will not have this assumption. Wortman and Brehm suggest that the more removed the testing session is from the training session, the stronger one can argue that later learning deficits reflect an inappropriate generalization from a situation in which the subject does not have control to one in which s/he does have control. Separation can be accomplished by conducting the training and test phases in different situations, on different tasks, administered by different experimenters.

Studies attempting such a separation of training and testing have produced mixed results. Roth and her colleagues (Roth and Bootzin, 1974; Roth and Kubal, 1975) and recently Tennen and Eller (1977), have found that under certain circumstances the performance of subjects given pretreatment with uncontrollable stimuli is superior to the performance of subjects given pretreatment with controllable stimuli or no pretreatment.

Roth and Kubal (1975) proposed a model which was later expanded by Wortman and Brehm (1975), to account for these apparently divergent findings. They suggest that expectation of control, importance of the outcome, and amount of helplessness training interact to determine whether an organism gives up (becomes helpless) or increases efforts to regain control (facilitation). In brief, the model

proposes that, if a person initially expects to be able to influence outcomes in a situation that is of some importance, then the initial reaction to finding outcomes to be uncontrollable should be to attempt to reestablish control through increased efforts. Continued experience with lack of control, however, eventually results in helplessness. The similarity between the training and test task situations presumably affects expectations of control. The more similar the test situation is to the situation in which helplessness training occurred, the more likely the subject is to demonstrate helplessness effects.

In the present study, helplessness as opposed to facilitation was the phenomenon of interest. Accordingly, subjects were given ample experience with lack of control (50 trials) in order to maximize the likelihood of helplessness effects. The pretraining task (unavoidable aversive noise on a button-pressing task) was one that has been highly reliable in producing helplessness effects in previous studies (Miller and Seligman, 1975; Klein, 1975; Miller and Seligman, 1976). On the other hand, it is of theoretical interest to demonstrate that helplessness effects are the result of inappropriate generalization rather than merely a function of response set. Accordingly, in the present study, the helplessness pretraining, therapy and test phases involved different tasks, administered in

different rooms, by different experimenters.

Learned helplessness and depression. The learned helplessness model has been proposed as a laboratory analogue for reactive depression in man. It has been suggested that learned helplessness and depression are similar in regard to etiology, symptomotology, prevention and cure. According to this model, reactive depression is assumed to be caused by uncontrollable situations which lead the individual to believe that his/her responses are generally ineffective in obtaining reinforcement. The belief in response-reinforcement independence is proposed as a primary symptom of depression which can account for many of the varied somatic, affective, and motoric symptoms that are generally considered to be part of the depressive constellation.

In a series of studies, Seligman and his associates have explored the relationship between learned helplessness and depression, focusing primarily on symptom parallels. Perceptions of response-reinforcement contingencies have been examined using the experimental paradigm of Phares (1957). Phares had shown that subjects who were led to believe that outcome on an ambiguous task was a function of skill were more likely to raise their expectancies of future success after a successful outcome and lower them after failure than were subjects who were led to believe that their performance was due to chance. In general,

subjects given a skill instructional set change their expectancies for future success more than subjects given a chance instructional set.

Miller and Seligman (1973) placed groups of depressed and nondepressed subjects in tests of skill and of chance. Outcomes were manipulated so that all subjects experienced the same pattern of success and failure. The experimenters found that, while initial expectancies did not differ for depressed and nondepressed subjects, following success and failure the two groups showed strikingly different patterns. The nondepressed subjects showed much greater expectancy changes in the skill task than in the chance task. The depressed subjects, however, did not change their expectancies any more in the skill than in the chance task. These results are consistent with predictions derived from the learned helplessness model of depression. Specifically, the results indicate that depressed individuals tend to perceive reinforcement as more response independent than nondepressed individuals in situations where reinforcement is, in fact, response dependent.

Miller, Seligman, and Kurlander (1975) found that when depressed subjects were matched for anxiety with nondepressed subjects, only the depressives showed the negative cognitive set described above, suggesting that this cognitive distortion is specific to depression.

Further support for the learned helplessness model of depression is provided by a series of studies conducted by Miller and Seligman (1975, 1976). Using a 3 (inescapable versus escapable versus no noise) x 2 (depressed versus nondepressed) factorial design, Miller and Seligman (1976) replicated their 1973 finding that depressed subjects not exposed to noise show perceptions of response-reinforcement independence in situations that are actually skill determined. In addition, they demonstrated that nondepressed subjects exposed to inescapable noise exhibit parallel deficits in perception of reinforcement contingencies. Specifically, nondepressed-inescapable noise and depressed-no noise subjects exhibited smaller decreases in expectancy following failure in skill, but not in chance tasks than nondepressed-no noise subjects. Similarly, Miller and Seligman (1975) found parallels between helpless and depressed subjects on measures of performance deficits: nondepressed subjects given prior experience with inescapable noise and depressed subjects not exposed to noise exhibited performance deficits relative to nondepressed subjects not exposed to noise.

In sum, this group of studies by Seligman and his coworkers have provided considerable evidence of symptom parallels between learned helplessness and naturally occurring depression.

Other studies in the experimental literature on psychological functioning in depression have produced findings that are less clearcut than those cited above with respect to the parallels between learned helplessness and depression. Overall, however, there does appear to be substantial evidence consistent with the learned helplessness model. Studies by Granick (1963) and Friedman (1964) are often cited as evidence that depression is associated with only minor impairments in psychological test performance. Miller (1975) and Hale (1976), however, both point out that this conclusion does not appear to be warranted by the data presented by these two researchers. Granick assessed the performance of psychotic depressive and normal subjects on information, similarities, and vocabulary tests and found that the depressives scored lower on all three, although the difference on the information test was the only one that reached statistical significance ($p < .05$).

Friedman (1964) compared the performance of psychotic depressives and normals on 33 cognitive, perceptual, and motor tests, obtaining 82 scores for each subject. He drew his conclusion of minimal differences between the two groups on the basis of the finding that the depressives performed significantly worse on only 4% of the test scores. If the .05 level of significance is employed, however, then depressives performed significantly worse on

nine of the dependent measures. In addition, Hale points out that Friedman used two-tailed tests of significance even though he was testing a hypothesis in which the direction of the difference was explicit. Because Friedman does not report the means, standard deviations or *t* values for any of his measures, it is not possible to determine whether differences were significant at the .05 level (one-tailed test) for any of the other scores.

In his comprehensive review of psychological deficit in depression, Miller (1975) concludes that there is considerable evidence of performance deficits associated with depression. Recent studies by Hale (1976) and Tennen (1976) provide further evidence of performance deficits in depression. Hale found that depressives performed more poorly than normals on a digit symbol task, while Tennen demonstrated that the performance of depressives was poorer on anagrams and a writing speed task.

The studies cited above seem to provide considerable evidence of symptom parallels between learned helplessness and depression, particularly as regards perceptions of reinforcement contingencies and performance deficits. In addition to symptom parallels, the learned helplessness model of depression suggests that learned helplessness and depression should both respond to the same treatment interventions. Finding procedures that are effective in

increasing or decreasing depressive deficit are important not only because of their obvious implications for treatment. As Miller (1975) points out, such procedures also provide us with further clues as to the factors that cause the deficits.

Seligman suggests that experience with successful mastery of events should reverse the perception of response-reinforcement independence and its debilitating effects on performance. An early study by Seligman, Maier and Geer (1968) lends support to this proposal. By forcing helpless dogs to perform the correct response to terminate shock and thus repeatedly exposing them to the response-reinforcement contingency, the experimenters were able to reverse the performance deficits associated with helplessness pretraining. Seligman, Rosellini and Kozak (1975) report similar results with rats. Klein and Seligman (1976) note, however, that in both of these studies the response in therapy was the same response used to test for helplessness. In order to demonstrate that a general belief in response-reinforcement independence was reversed, as opposed to the animals having learned a specific escape response, it is necessary to use different tasks for the therapy and test phases.

Klein (1975) examined the therapeutic implications of the learned helplessness model for man, utilizing different tasks in the therapy and test phases. In a series of studies,

he demonstrated that experience with controllable events (solvable cognitive discrimination problems) reversed the perceptions of response-reinforcement independence and the performance deficits associated with both helplessness and depression. These results confirmed the predictions made by the learned helplessness model.

Recently, experimenters have begun to examine the relationship between attribution processes and the phenomena of learned helplessness and depression. These studies appear to have great potential for elucidating the cognitive underpinnings of helplessness and depression and for suggesting effective treatment procedures. The theoretical underpinnings of this research stem primarily from Weiner's comprehensive model of attribution theory and achievement motivation (Weiner et al., 1971; Weiner, 1974).

Attribution Theory

Weiner et al. (1971) propose that individuals utilize four basic causal factors in attempting to explain outcomes of achievement-related situations. The four causal factors are ability, effort, task difficulty, and luck. That is, in attempting to explain the success or failure of an achievement-related action, an individual attributes his/her own (or the actor's) level of performance to ability level, the amount of effort that was expended, the difficulty of the

task, and/or the amount and direction of experienced luck. Moreover, future expectations of success and failure are hypothesized to be based on judgments of level of ability in relation to perceived task difficulty, as well as an estimation of intended effort and anticipated luck.

Weiner has devised a two-dimensional classification scheme for the four causal factors. One dimension along which the factors differ is that of locus of control. Ability and effort describe qualities internal to the actor, whereas task difficulty and luck describe environmental or external factors. The causal elements also vary in terms of their relative stability over time. Ability and task difficulty are relatively stable or invariant for any given task, while effort and luck may vary considerably. This two-dimensional scheme is diagrammed below:

Classification of Attributional Factors

		Locus of Control: internal	Locus of Control: external
Stability	fixed	Ability	Task Difficulty
	variable	Effort	Luck

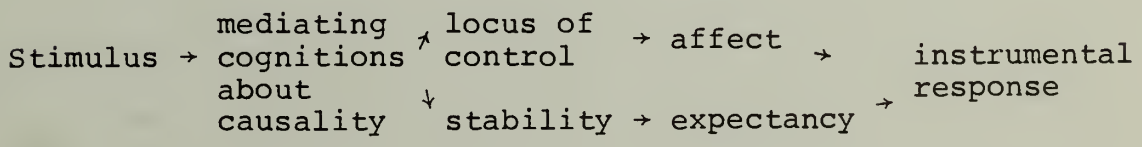
Causal attributions for previous success and failure experiences have been shown to influence both expectancy

of future success and affective reactions to success and failure. Several studies have demonstrated that the causal stability, rather than the locus of control dimension, affects estimates of future success (Meyer, 1973, reported in Weiner et al., 1972; McMahan, 1973; Weiner et al., 1976). That is, if causal conditions are expected to remain the same, then the current outcome will be expected to recur. A success attributed to ability or task ease, therefore, increases the expectation that success will occur in the future, while a failure attributed to lack of ability or task difficulty strengthens the belief in subsequent failures. On the other hand, if the conditions that determined a current outcome are perceived as subject to change, then the present outcome will not necessarily be repeated. A success attributed to great effort or good luck, or a failure attributed to lack of effort or bad luck, has little effect on the expectancy of future success or failure.

Studies in the locus of control literature (employing the research paradigm devised by Phares which was described previously) often compare expectancy changes in skill (ability) versus chance (luck) situations. Since ability is viewed as an internal, stable attribute, while luck is an external, unstable attribute, such a paradigm prevents independent investigation of the different effects of the two dimensions. (Implications of the

attributional model for learned helplessness studies employing the skill versus chance experimental paradigm will be discussed below).

While the causal stability dimension plays a role in determining expectancy of future success, the locus of control dimension influences affective reactions to success and failure. Weiner and Peter (1973) have shown that pride and shame in achievement situations are maximized when outcomes are ascribed to internal factors and are minimized when outcomes are attributed to external causes. Thus, success attributed to high ability or hard work results in greater pride than success that is perceived as due to the ease of the task or good luck. Similarly, failure attributed to low ability or a lack of effort results in greater shame than failure that is perceived as caused by the difficulty of the task or bad luck. The attributional model of achievement motivation can be portrayed by the following schematic model:



Attribution theory and learned helplessness. In their review of the helplessness literature, Wortman and Brehm (1975) raise the question of whether the attribution of

causality for lack of control will affect an individual's feelings of helplessness. Following a line of reasoning consistent with Weiner's model, Wortman and Brehm speculate that the attribution of failure to one's own shortcomings may produce greater psychological effects and generalize further than attributions to external factors. The studies discussed below provide recent evidence in support of Wortman and Brehm's contention that assignment of causality for outcomes plays an important role in determining reactions in future achievement-related situations.

Tennen and Eller (1977) examined the effects of manipulating causal ascriptions for lack of control on subsequent performance. Subjects were given varying amounts of experience on concept-formation problems with noncontingent reinforcement. In addition, attributions of outcome to task difficulty were manipulated via instructions. The results suggested that helplessness effects are a function of both the amount of helplessness training (i.e., experience with uncontrollability per se), as well as the availability of attributional cues. Tennen and Eller found that when prior failure was attributed to the difficulty of the task, helplessness effects were reversed and subjects actually showed improved performance on a subsequent task.

In an experiment by Dweck and Repucci (1973), the

attributional correlates of giving up versus persistence were explored. School children were administered a series of unsolvable problems. Afterwards, their performance on a series of solvable problems was examined. The authors found that those children who persisted in the face of failure took greater personal responsibility for success and failure and especially tended to emphasize the role of effort in determining outcomes. Conversely, those children who tended to give up following failure took less personal responsibility for outcomes and, even when they did accept responsibility, attributed success and failure to the presence or absence of ability rather than to effort.

In a later study, Dweck (1975) explored the implications of an attributional model for the treatment of learned helplessness. Dweck argued that a treatment procedure which provides subjects with only mastery experiences (like the treatment procedure in Klein's study discussed above), is not likely to alter subjects' reaction to failure as a cue for continued failure and consequent decrease in persistence.

Dweck's subjects were school children who had been identified as having an expectation of failure and who showed a marked deterioration of performance in the face of failure. Dweck's therapy procedure involved training half of her subjects to take personal responsibility for

failure and to attribute it to a lack of effort. The other subjects were given only success experiences. Dweck found that the performance of children who had received only mastery experiences continued to deteriorate following failure. Those children who had received attribution retraining, however, expended more effort following failure and demonstrated no deterioration and even a tendency toward improved performance following failure.

The present study attempted to reconcile the discrepant findings of Klein's study and Dweck's study regarding the efficacy of a therapy procedure which provides only mastery experiences in reversing helplessness. The methodology of these two studies differ in several respects, all of which could conceivably account for the different results obtained.

In her study, Dweck selected as subjects those children who were identified (by their school psychologist, principal, and teacher) as having an expectation of failure and who showed a marked deterioration of performance in the face of failure. These selection criteria present a somewhat different picture of learned helplessness than that proposed by Seligman and his associates. According to Seligman's model, the cognitive distortion evidenced in learned helplessness involves a belief in response-reinforcement independence. This is reflected in helpless

subjects showing smaller changes in expectancy following success or failure in skill situations than nonhelpless subjects. No initial difference in expectancy between helpless and nonhelpless subjects is predicted in this model. On the other hand, Weiner's attribution model has shown that persons with an initial expectation of failure should respond to failure with a greater decrease in expectancy than persons with an initial expectation of success. Thus, while Dweck's notion of learned helplessness appears to be conceptually similar to Seligman's concept of learned helplessness, the two differ at least in this one important aspect.

The operationalization of learned helplessness as the deterioration of performance in the face of failure is also somewhat different than Seligman's conceptualization. In the laboratory studies of helplessness, helpless subjects are subjects who, following failure on one task, demonstrate performance deficits on a new instrumental task.

This difference in the conceptualization of learned helplessness and consequently in the nature of the subject population could account for the failure of the success only treatment to improve the performance of the subjects in Dweck's study, whereas the subjects in Klein's study showed significant improvement with this procedure. In the present study, a success only therapy procedure was

compared with an attribution retraining therapy procedure given to subjects who had undergone helplessness training in the laboratory (exposure to an inescapable aversive tone).

The fact that the subjects in Dweck's study were children with a median age of 11 years may also have played a role in the effect of the effort reattribution on subjects' performance. Weiner and Peter (1973) found that among 10-12 year olds, effort is more important than outcome in determining the allocation of reward and punishment for achievement behaviors. Among older subjects, however, the order of importance of these factors is reversed. It is possible that an effort reattribution training procedure would not have as potent an effect on adult subjects as it did on Dweck's subjects. The present experiment examined the effect of an effort reattribution for failure training procedure on college age adults.

The difference between Dweck's and Klein's notion of learned helplessness is also reflected in the use of different methodologies. In Dweck's study, the task that was used in the therapy phase (mathematics problems) was the same as the task that was used to test for helplessness. In Klein's study, a different task was used in the helplessness training phase (button-pressing), the therapy phase (discrimination problems) and the test phase (shuttlebox

task). It is conceivable that, while Dweck's subjects learned to respond more persistently following failure on mathematics problems they would still tend to give up in the face of failure on other tasks. And, in fact, Dweck's subjects did fail to show significant changes from pretraining to posttraining on global measures of reaction in achievement situations. As learned helplessness is thought to reflect a fairly general belief in response-reinforcement independence, procedures designed to alleviate helplessness should demonstrate generalization of responses learned in therapy. Accordingly, the present study used different tasks during each phase (helplessness training, therapy and testing).

The dependent measure selected by Dweck can also account for the different results she obtained concerning the effectiveness of the success only therapy as compared to the results obtained by Klein. Dweck reports that subjects given only mastery experiences continued to show deterioration in the face of failure, whereas subjects given attribution retraining showed substantial decreases in their maladaptive reaction to failure. Klein's study, on the other hand, measured overall performance on a new task. While Dweck reports that most of the subjects in both treatment groups showed improvement in their performance on days when they were not confronted with failure, she

does not compare the performance of the two groups on nonfailure days or the overall performance of the two groups. In the present study, the overall performance and postfailure performance of subjects given attribution retraining and subjects given only success experiences was compared.

Attribution theory and depression. The attributional underpinnings of depression were examined in a recent study by Tennen (1976). This experimenter found that depressed subjects attributed success more to luck than did nondepressed subjects, while they attributed failure more to a lack of effort and, to a lesser extent, lack of ability. The nondepressed subjects attributed success more to ability and effort than did the depressed subjects. These results are consistent with Beck's notion (previously discussed) that depression reflects a tendency to take personal responsibility for failure to attain important goals. This attributional pattern suggests that depression may, in fact, be a subset of learned helplessness. Whereas learned helplessness reflects a belief in uncontrollability, depression may reflect a special case of this belief whereby failure is attributed to oneself. Furthermore, the attributional model suggests that ascription of outcome to effort versus luck has affective consequences, with failure attributed to lack of effort resulting in greater negative affect than failure attributed to bad luck.

The results of the studies of learned helplessness and

depression discussed earlier (Miller and Seligman, 1973; Miller, Seligman and Kurlander, 1975; Miller and Seligman, 1976) are consistent with the model suggested here. Recall that these studies utilized the Phares (1957) chance versus skill paradigm discussed earlier. To review briefly, these studies found perceptions of response-reinforcement independence in both helpless and depressed subjects. The non-depressed subjects showed greater expectancy changes in skill than in chance tasks, while the depressed and helpless subjects did not show significant differences in expectancy in skill versus chance tasks. However, subjects' attributions for success and failure were not ascertained in these studies. As the attributional literature indicates, the small expectancy changes shown by depressed and helpless subjects in the skill situation could be caused by a belief that outcomes are determined either primarily by luck or primarily by effort. Thus, it is possible that while depressed and helpless subjects show similar expectancy changes in skill versus chance situations, they do so for different reasons. The small expectancy changes helpless subjects demonstrate following failure may reflect the perception that failure is due to bad luck, whereas the small expectancy changes depressed subjects display after failure reflects a belief that failure is due to lack of effort.

In the present study, while specific predictions were not made regarding attributional patterns, the attributional set of learned helpless and depressed subjects were further explored.

A study by Loeb, Beck, Feshback, and Wolf (1964) on the effects of manipulating level of performance on depressive affect, has further implications for an attributional model of depression. These researchers found that subjects who were led to believe that their performance was superior to others displayed more self-confidence, rated themselves as happier and expressed greater willingness to participate in future competitive tasks. They also found, contrary to initial predictions, that the depressed subjects were more affected by success than the nondepressed subjects when the groups were asked to estimate their future level of performance on a different task.

The authors suggest that these results are inconsistent with the notion that depressed subjects are particularly responsive to negative information about themselves, while they reject positive information. However, an alternative explanation of the results is equally plausible. Closer examination of the procedure for manipulating level of performance reveals that attributions for outcome were inadvertantly manipulated as well.

The experimental procedure involved showing subjects

that their performance was consistent (either superior or inferior to other subjects) on four consecutive word completion lists. Frieze and Weiner (1971) have demonstrated that outcomes that are consistent over trials tend to be attributed to stable (task ease or ability) rather than to unstable (luck or effort) factors. In addition, the use of comparison subjects mitigated against task ease attributions for success. Consequently, success (or failure) on this task would not be likely to be attributed to effort or luck. In other words, the nature of the experimental manipulation prevented depressives from making their usual attribution of success to luck, encouraging instead an attribution to ability. Conversely, nondepressed subjects were encouraged to view failure as being due to lack of ability, resulting in reactions to failure similar to that of depressed subjects.

In a recent study, Klein, Fencil-Morse and Seligman (1976) examined the effects of manipulating attributional cues for failure on the performance of depressed and nondepressed subjects on a subsequent task. For the subjects given no attribution for failure, results were consistent with previous helplessness studies. The nondepressed subjects who were given unsolvable discrimination problems showed later performance deficits on anagrams relative to subjects given solvable problems or control subjects. The

depressed subjects given no prior experience showed deficits on the anagram task parallel to the deficits displayed by the nondepressed subjects given experience with uncontrollability. The results for the groups given attribution for failure instructions are particularly interesting and are discrepant with the notion that learned helplessness and depression show parallel symptoms. For nondepressed subjects, the attribution of failure instructions did not affect performance. Nondepressed subjects given unsolvable discrimination problems performed worse on the anagram task regardless of whether the prior failure was attributed to task difficulty, to ability, or when cues for prior failure were not provided. In contrast, instructing depressed subjects that their prior failure was due to the difficulty of the task resulted in improved performance on the later anagram task.

The authors attempt to explain these results by suggesting that the differential effect of the attributional manipulation on depressed and nondepressed subjects may have been due to the two groups interpreting the instructions differently. They speculate that the depressed subjects may have considered the difficult task as less important than did the nondepressed subjects and, consequently, were less affected by failure on this task. The present writer agrees, however, with Tennen's contention

that the Klein et al. post hoc explanation is not within the rubric of the learned helplessness model. The results of the studies by Dweck and Repucci, Loeb et al., and Tennen cited above suggest an alternative explanation, one in line with Wortman and Brehm's speculations. It appears that failure by itself is sufficient to produce performance deficits. However, failure that is attributed to internal causes enhances the emotional impact as well as the performance deficits associated with failure. Furthermore, the depressive is particularly prone to react to failure with self-blame. Consequently, relieving the depressive of a sense of personal responsibility for failure will cushion its impact.

Given the above line of reasoning, what would be the effect of an effort reattribution for failure procedure on depressed subjects? Tennen's (1976) study offers some suggestive evidence. Half of the subjects (depressed and nondepressed) in Tennen's study were led to believe that outcome on an anagram task was primarily determined by effort expenditure. Outcome was, in fact, manipulated by giving half of the subjects easy letter combinations and weighting the other half with difficult and unsolvable letter combinations. Tennen found that, although depressed subjects performed less well than nondepressed subjects in both the neutral and effort-salient conditions, only the

latter difference reached statistical significance. Post-performance persistence on a writing speed task followed a similar pattern. In brief, depressed subjects performed worse when led to believe that their outcomes were determined primarily by effort. These results contradict Dweck's finding of improved performance for helpless subjects given effort attribution retraining.

Tennen's results are also damaging to Seligman's proposal of learned helplessness as an analogue to depression. If laboratory induced learned helplessness and naturally occurring depression are analogous phenomena, then any procedure which alleviates helplessness should parallel therapy that alleviates depression. The present study directly compared the effects of success only experiences and attribution retraining on the performance of depressed and helpless subjects.

Overview

The purpose of the present study was to examine the differential effects of two training procedures in reversing the performance deficits associated with depression and learned helplessness.

One-hundred and twenty eight college students screened on the basis of level of depression served as subjects. The experiment was conducted in three phases.

The first phase was designed to induce learned helplessness in nondepressed subjects by exposure to inescapable noise. A nondepressed group that was not exposed to noise served as a comparison control, and a nondepressed group exposed to escapable noise served as a control for effects of exposure to aversive stimuli. The depressed subjects were not exposed to the helplessness pretreatment (i.e., not exposed to aversive noise).

In Phase II, the depressed subjects and the helpless (Nondepressed-Inescapable Noise) subjects were divided into three therapy groups: (a) Success Only; (b) Attribution Retraining; and (c) No Treatment control group. The Success Only therapy groups were given experience with a series of solvable block design problems. False feedback was provided to subjects indicating that they had scored in the 93rd percentile relative to a sample group tested previously on the same task. The Attribution Retraining groups received the same series of solvable block design problems, but were given instructions emphasizing the importance of effort in determining outcome on the task. In addition, on two trials, the subject was not given sufficient time to complete the design. On these trials, the experimenter verbally attributed failure to insufficient effort. The Attribution Retraining groups were given false feedback concerning their performance level identical to

that received by the Success Only groups.

In Phase III, all groups were tested on anagram problems, with 10% of the problems being unsolvable. Overall performance, and the effects of failure on subsequent performance were measured.

Predictions. The predictions are divided into two sections: (A) predictions concerning the effects of helplessness training, and (B) predictions concerning the effects of the different therapies.

A. Helplessness training. The learned helplessness model predicts that nondepressed subjects receiving pretreatment with inescapable noise should show later learning deficits relative to nondepressed subjects receiving no noise or escapable noise. Therefore, it was predicted that:

Prediction 1: Among the No Treatment groups, nondepressed subjects in the Inescapable Noise group should exhibit longer latencies in solving anagrams and should fail to solve more anagrams than the Nondepressed-No Noise and Nondepressed-Escapable Noise groups.

Learned helplessness is proposed as a laboratory model of depression in humans. Consequently, depressed subjects receiving no noise and no therapy should exhibit learning deficits parallel to those produced by uncontrollability.

Prediction 2: Depressed subjects receiving no therapy should exhibit longer latencies in solving anagrams and should fail to solve more anagrams than nondepressed subjects receiving no noise and no therapy.

Prediction 3: Higher Zung Self-Rating Depression Scale scores, reflecting increasing depth of depression, should correlate with degree of impairment on the anagrams.

B. Effects of the different therapies. The learned helplessness model predicts that mastery experiences should reverse the learning deficits characteristic of depressed and helpless subjects. Consequently, it was predicted that:

Prediction 4: Learned helpless subjects (nondepressed subjects receiving inescapable noise) given Success Only experiences should show better anagram performance than learned helpless subjects given no therapy.

Prediction 5: Depressed subjects receiving Success Only treatment should exhibit better anagram performance than depressed subjects receiving no therapy.

Dweck (1975) demonstrated that a procedure which alters attributions for failure is superior to a procedure which provides only success experiences in that it enables helpless subjects to sustain performance despite failure.

Consequently, it was predicted that:

Prediction 6: Learned helpless subjects given Attribution Retraining should show better postfailure performance on anagrams than learned helpless subjects given Success Only therapy.

Tennen's (1976) study indicates that depressives are prone to self-blame following failure and suggests that a procedure which enhances internal attributions for outcome exacerbates the performance deficits associated with depression. Therefore, the present study predicted that:

Prediction 7: Depressed subjects receiving Success Only therapy should show better postfailure performance on anagrams than depressed subjects receiving Attribution Retraining.

CHAPTER II

METHOD

Subjects. The subjects were 128 undergraduates who participated in the experiment in order to fulfill course requirements for the introductory psychology course at UCLA. The experiment was advertised as a study of learning-performance. Volunteers were restricted to those whose native language is English.

Data was collected from 131 subjects. However, one male subject in the Escapable Noise group was replaced because he did not learn to escape, while two female subjects (one from the Nondepressed-Inescapable Noise-Success Only group, and the other from the Nondepressed-Inescapable No-Treatment group) were replaced because both had previously participated in a similar experiment and consequently were aware of the nature and purpose of the outcome manipulation.

The subjects were assigned to depressed and nondepressed groups according to their scores on the Zung Self-Rating Depression Scale (Zung, 1965). Pilot testing was conducted prior to the study in order to determine the mean Zung Self-Rating Depression Scale score for a comparable population. This score was used as the cutting score for

the present study. On the basis of this pilot data, subjects scoring 23 or above were assigned to the depressed group, while subjects scoring 22 or below were assigned to the nondepressed group.

Subjects were recruited until eight males and eight females were obtained for each of the eight groups. Thus, a total of 24 depressed males, 24 depressed females, 40 nondepressed males and 40 nondepressed females were recruited.

Experimenters. The experimenters were one male and one female advanced undergraduate psychology majors, plus the author. All are Caucasian and range in age from early to late twenties. One experimenter administered the initial questionnaires and conducted the helplessness training phase. The second experimenter conducted the therapy phase. The author conducted the test phase and debriefing.

Scoring of the depression scale and assignment of subjects to groups was accomplished by computer.[1] A code number appeared on a video screen informing the first two experimenters as to the assignment of subjects to conditions. The first experimenter had a code sheet pairing each code number with assignment to pretreatment conditions (Escapable

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[1]On-line interactive computer terminals were used at the UCLA Center for Computer-Based Behavioral Research.

Noise, Inescapable Noise and No Noise), while the second experimenter had a code sheet pairing each code number with assignment to treatment conditions (Success Only, Attribution Retraining or No Treatment). Consequently, the experimenters were unaware of the subjects' overall assignment to groups. In order to prevent the experimenter who conducted the treatment phase from inferring that one treatment was expected to be superior to the other, she was told that this was an exploratory study in which differing patterns of results might follow from each treatment. The author was not present during the helplessness training and therapy so that, during the test phase, the author was unaware of subjects' assignment to helplessness or therapy groups.

Measures.

Information sheet. The subject's name, sex, age, year in school, major and SAT score were recorded on the sheet. In addition, subjects were asked to rate their degree of experience in doing word games on an 11-point Likert scale anchored at the extremes (No experience at all - A great deal of experience). (See Appendix A).

I-E Scale. The I-E Scale was devised by Rotter (1966) to assess subjects' beliefs concerning the locus of causality for events. The internal-external control

construct is considered to be a measure of generalized expectancy. High scores indicate a belief that reinforcements are a function of external forces (fate, chance, luck, powerful others), whereas low scores indicate a belief that reinforcements are a function of one's own actions (See Appendix B).

The test consists of 29 items (including six filler items) in forced-choice format. Rotter reports high internal consistency and test-retest reliability.

Zung Self-Rating Depression Scale. The Self-Rating Depression Scale (SDS) was devised by Zung (1965) to assess the affective, cognitive, somatic and motoric symptoms of depression. The scale consists of 20 items, ten worded symptomatically positive, and ten symptomatically negative. Subjects are asked to determine the extent to which each statement is true for them according to the following five quantitative categories: none of the time, a little of the time, some of the time, a good part of the time, or most of the time. (See Appendix C).

Scores can range from 0-80 with higher scores indicating a greater degree of self-reported depression. Zung reports significant correlations between the scale and clinical diagnoses of depressive disorder and significant correlations with the depression scale of the MMPI. The

SDS has been used as a measure of depression in recent studies (Tennen, 1976; Hale, 1976) involving sub-clinical populations.

Mood scales. Subjects were asked to rate their present mood on an 11-point Likert scale ranging between two extremes (e.g., extremely sad - extremely happy). Five mood scales were used to roughly monitor the degree to which subjects felt communicative, sad, serious, effective and angry. Each scale consisted of a question about the subject's present mood (e.g., How sad are you feeling right now?). The mood scales were patterned after the sliding scales devised by Beck and reported in Klein and Seligman (1976). (See Appendix D).

Attribution rating scales. Subjects were asked to make causal ascriptions to luck, effort, task difficulty and ability on a 7-point Likert scale anchored at the extremes (not at all a factor - a very potent factor). The attribution rating scales were modeled after scales devised by Tennen (1976). (See Appendix E).

Apparatus.

Helplessness training. The apparatus was a button-pressing task modeled after the equipment reported by Hiroto and Seligman (1975). It consisted of two spring-loaded buttons located on the front panel of a wooden box

measuring 7" x 6½" x 7½". One button controlled a small red light, while the other controlled a small green light. Directly above and in the center of the two buttons was a small white light labelled "correct". The aversive stimulus, a 4400 hertz tone emanating from an hp audio oscillator, was presented to subjects at 90 dBA through Wollensak 3M earphones. The experimenter was seated in an adjacent room separated by a one-way mirror. The experimenter was equipped with a panel with lights corresponding to those used by the subject, so that the experimenter could monitor the subjects' responses. In addition, the experimenter's panel contained a switch which controlled the "correct" light, and a switch which controlled the tone.

Therapy task. The therapy task consisted of a series of 20 individually administered block designs. The subject was shown a card with a nine-block design on it and was asked to replicate the pattern with nine blocks which were given to the subject. The blocks used to form the designs were one-inch cubes of the type used in the WAIS, each of which had two red sides, two white sides, and two diagonally split (red/white) sides. The designs displayed were 2 x 2 inch and were drawn in color (red and white) on individual 5 x 7 inch filing cards. (See Appendix F).

Test task. The test task was a series of 18 solvable anagrams selected from a list of five-letter anagrams

(Tresselt and Mayzner, 1966). Interspersed among the solvable anagrams were two unsolvable five-letter anagrams. The anagrams were placed individually on 3 x 5 inch filing cards. (See Appendix G).

Design. The experiment was conducted in three consecutive yet distinct phases: helplessness training, therapy, and testing. A diagram of this design is presented in Table 1.

In Phase I, nondepressed subjects were exposed to inescapable noise. A Nondepressed-No Noise group served as a comparison control, and a Nondepressed-Escapable Noise group served as a control to test for the effects of aversive stimuli on later performance. Depressed subjects were not exposed to the helplessness training.

In Phase II, the Nondepressed-Inescapable and Depressed groups were each divided into three groups: (1) Success Only; (2) Attribution Retraining; and, (3) No Treatment control.

In Phase III, all eight groups were tested on a performance task.

The independent variables were depth of depression (high versus low), pretreatment condition (No Noise versus Escapable Noise versus Inescapable Noise) and therapy condition (Success Only versus Attribution Retraining versus No Treatment).

Table 1

Diagram of Experimental Design

	Nondepressed				Depressed		
	Escapable	Inescapable		No Noise			
Phase I	N = 16	N = 48		N = 16	N = 48		
Phase II	N = 16	SO N=16	AR N=16	NT N=16	N = 16	SO N=16	AR N=16	NT N=16
Phase III	N = 16	SO N=16	AR N=16	NT N=16	N = 16	SO N=16	AR N=16	NT N=16

Total N = 128

SO = Success Only treatment
AR = Attribution Retraining treatment
NT = No Treatment control

The dependent variables were four measures of anagram performance (total number correct, total time, postfailure number correct, and postfailure total time), mood scales (administered before treatment and following each treatment phase), and attribution rating scales (administered after each treatment phase).

Procedure. Subjects were recruited for a study of learning-performance and were scheduled for individual experimental sessions. Upon arrival, each subject was greeted by the first experimenter, escorted into the first experimental room and seated in front of a computer terminal and video screen. All subjects were told that the purpose of the experiment was to examine college students' test performance and factors that might influence performance. It was further explained that they would be given a series of tasks and would be asked to complete a series of questionnaires.

The experimenter then explained that the first questionnaire would be administered by computer. The subject's name and sex were typed into the terminal, and instructions for completing the SDS appeared on the video screen. The subject was instructed that questions would appear on the screen one at a time. Typing a response and pressing the return key would produce the next question. After subjects

indicated that they understood the instructions, the experimenter left the room so that subjects could complete the questionnaire in private.

Upon subjects' completion of the SDS, the experimenter returned and instructed the computer to assign a code number for the subject. The subject was told that the number represented the file under which all of that individual's data would be coded. In actuality, the program caused computer scoring of the SDS and assignment to treatment groups. The code number was a six-digit random number which had previously been assigned to one of the eight groups. The first and second experimenters each had a code list which paired each of the code numbers to the appropriate treatment for that phase only.

Assignment to depressed and nondepressed groups was accomplished as described previously. The 80 nondepressed subjects were assigned to one of five experimental groups in the fixed rotating order: (1) Escapable Noise - No Treatment; (2) Inescapable Noise - Success Only; (3) Inescapable Noise - Attribution Retraining; (4) Inescapable Noise - No Treatment; and (5) No Noise - No Treatment, with the constraint that eight males and eight females be assigned to each group. The pattern of assignment enabled one subject in each of the Inescapable Noise groups

to be yoked to a subject in the Escapable Noise group for pattern and duration of noise.

The 48 depressed subjects were assigned to one of three experimental groups in the fixed rotating order: (1) Success Only; (2) Attribution Retraining; and (3) No Treatment, with the constraint that eight males and eight females be assigned to each group.

Next, subjects were asked to complete a questionnaire packet which consisted of the following questionnaires in fixed order: Information Sheet, I-E Scale, Mood Scale.

Subjects were then led to the second experimental room.

Pretreatment phase. Subjects in the Escapable Noise and Inescapable Noise groups were given a brief sample of the tone before being asked to continue. All subjects decided to continue with the experiment after hearing the sample tone.

Subjects in the Escapable and Inescapable Noise groups were given the following instructions:

> There are two buttons located on the panel in front of you. One button controls a red light and the other controls a green light [experimenter demonstrated]. From time to time, a loud tone will come on for a while. When the tone comes on, pressing the correct pattern of red and green will terminate the noise. The white "correct" light in front of you will serve as a signal for you. If the "correct" light goes on after the noise stops, then you have made the correct response and have stopped the noise. If the "correct" light does not go on, then you

> have not stopped the noise, but rather the noise has stopped automatically according to a preprogrammed schedule.

Subjects were then given 50 trials with the unsignaled tone. Each trial lasted five seconds in duration, with an intertrial interval ranging from 10-20 seconds. Subjects in the Escapable Noise group could escape the noise by pressing the pattern: red, red, green. If a subject in the Escapable Noise group failed to escape the tone, it lasted five seconds and then the next trial began. Successful escape response was followed by the onset of the "correct" light, which indicated that the subject had terminated the noise. For subjects in the Inescapable Noise groups, the buttons had no effect on the tone. For these subjects, the experimenter terminated the trial according to a preprogrammed schedule which yoked each Inescapable Noise subject to an Escapable Noise subject for pattern and duration of noise.

Subjects in the No Noise groups were given a sheet of paper on which the letters of the alphabet were printed, one letter to a line. They were asked to make up a code to represent the letters, using the colors red and green. Subjects were given 15 minutes to complete the code.

Following completion of the button-pressing task or the control task, subjects were asked to fill out a second mood questionnaire and an attribution rating scale. Sub-

jects were then led to the third experimental room where they were greeted by the second experimenter.

Therapy phase. Subjects in the Success Only and Attribution Retraining groups were given the following instructions for the therapy task:

> I am going to give you a series of block designs. For each problem, I will show you a card with a pattern printed on it like this one [experimenter exhibits sample card]. Then I will give you these nine blocks [experimenter places the blocks on the table between them] and ask you to duplicate the pattern printed on the card with the blocks. Notice that each block has two red sides, two white sides, and two diagonally split (red/white) sides. Watch me do this first pattern [experimenter demonstrates sample block design. After the design is completed and the subject indicates that s/he understands the task, the experimenter disassembles the block design and moves the blocks toward the subject]. Now you try it. Make the same pattern that I just made. [After the subject has successfully completed the design, the experimenter continues the instructions. If the subject fails to successfully complete the design within 2 minutes, the experimenter demonstrates again.] I will be timing your performance on these designs. Please indicate when you have completed each design.

In addition, subjects in the Attribution Retraining groups were given instructions which stressed effort expenditure as the primary determinant of outcome.

Response latencies were measured by the experimenter with a hand-held stopwatch. Subjects in the Success Only

condition were given a maximum of two minutes to solve each problem. Following problems that were correctly solved, the experimenter made such comments as "Good" and "You got it." Any failures to solve were glossed over, with the experimenter merely proceeding to the next design card.

The procedure was the same for the Attribution Retraining groups on 18 of the 20 trials. However, on the fourth and twelfth trials, the experimenter stopped the subject when s/he had almost, but not completely, finished the block design. On these trials, the experimenter commented, "Time is up. You almost finished that problem. You needed to try just a little harder in order to finish that one in time." Following the next problem that was correctly solved, the experimenter would note, "You got it. See, you can do it if you try hard enough."

Following completion of the 20 block designs, the experimenter computed the total amount of time taken to complete the 20 designs on a pocket calculator. Subjects were told that their score was to be compared with the scores of a sample group of subjects who had been previously tested on this task, and the subject was invited to view the comparison. The total time was punched into a computer terminal. A distribution of raw scores paired with a percentile distribution appeared on a video screen. (See

Appendix H for a sample distribution for a subject with a total score of 1600 seconds). The computer had been programmed so that, no matter what score was punched in, the feedback informed the subject that his/her raw score ranked in the 93rd percentile, based on a sample of 378 UCLA undergraduates tested between September, 1973 and June, 1975. The experimenter explained how a percentile score should be interpreted and exclaimed that the subject had performed very well.

Next, subjects were asked to complete a third mood questionnaire and a second attribution rating scale.

Subjects in the No Treatment control groups were first shown the block design cards two at a time and allotted 30 seconds to select the most complex design of each pair of cards. Then all 20 cards were laid out before the subject and s/he was asked to rank order all of them in terms of complexity of the design. The cards were then shuffled and again placed in front of the subject. This time the subject was asked to rank order them from least liked to most liked. The control subjects were also asked to complete a third mood questionnaire and a second attribution rating scale at this point.

All subjects were then led to a different experimental room where they were greeted by the final experimenter.

Test phase. The order of presentation of the 20 anagrams was fixed for all subjects with the unsolvable anagrams presented on the sixth and fifteenth trials. Subjects were allowed up to 90 seconds to solve each anagram. Response latencies were measured by the experimenter with a hand-held stopwatch.

The following instructions were given to all subjects:

> I am going to ask you to solve some anagrams. As you know, anagrams are words with the letters scrambled. The task is for you to unscramble the letters so that they form an English word. I will present the anagrams to you one at a time. When you have found the word, say it out loud to me.

The experimenter recorded each of the subject's responses, but did not provide feedback as to the correct answer. For scheduled or unscheduled failures to solve the anagram within the time limit, the experimenter instructed: "Time is up. Let's go on to the next one."

Following the completion of the anagram task, subjects were retested on the mood scales and the attribution rating scales. The subject was then debriefed and told that the experiment was complete.

The actual format of the experimental session is presented in Table 2.

Table 2

Experimental Session Format

Initial Testing	Zung Self-Rating Depression Scale
	Information Sheet
	I-E Scale
	Mood Scale I
Pretreatment	Escapable Noise or Inescapable Noise or
	No Noise control ("Morse Code")
	Mood Scale II
	Attribution Rating Scale I
Therapy	Success Only or Attribution Retraining or
	No Treatment control (Rank Order Cards)
	Mood Scale III
	Attribution Rating Scale II
Testing	Anagram test
	Mood Scale IV
	Attribution Rating Scale III

C H A P T E R I I I

RESULTS

The analyses of variance and covariance of performance, mood, and attribution ratings utilized BioMed P2V computer programs. Correlational analyses and t-tests utilized Statistical Package for Social Sciences computer programs.

Self-Rating Depression Scores

The means and standard deviations of the SDS scores for the eight groups are presented in Table 4. In order to check the effectiveness of the random assignment of subjects to treatment groups with regard to depression scores, two sex x treatment analyses of variance were performed: one for subjects within the depressed group, and one for subjects within the nondepressed groups. A summary of these analyses is presented in Table 5.

The analyses indicated that, in the depressed groups, females were somewhat more depressed than males, although this difference was only marginally significant ($F = 3.78$, $df = 1/41$, $p = .06$). There were no other significant differences in level of depression.

In the present study, administration and scoring of the SDS followed procedures employed by Hale (1976) and Tennen

(1976) which involve a modification of the procedures suggested by Zung (1965). In the original version, subjects are asked to rate each of the twenty items in four quantitative terms: a little of the time, some of the time, a good part of the time, or most of the time. In scoring, a value of one, two, three, or four is assigned to a response depending upon whether the item is worded positively or negatively (higher scores indicate a greater degree of depression). In order to render the scale more appropriate for a presumably less depressed college population, the modified version offers a fifth rating category, "none of the time". Values of 0, 1, 2, 3, and 4 are assigned to the response categories, the order depending upon whether the item is worded positively or negatively.

In order to enable comparison of results from the present study with those reported by Zung, the SDS items were rescored using the original scoring criteria. As a means of eliminating the extra response category in the present study, any items that had been marked "none of the time" were rescored as if they had been marked "a little of the time". Using this new scoring criteria, scores for the depressed subjects ranged from 33-63 with a mean of 39.92 and scores for the nondepressed subjects ranged from 22-35 with a mean of 29.12.

Zung reports that the range of scores for 56 patients

hospitalized with admitting diagnoses of depression was 30-72 with a mean of 51.7. A normal control group of 100 individuals had scores ranging from 20-35 with a mean of 26.4. While the present "depressed" subject population was clearly less depressed than the patients reported in Zung's study, there is considerable overlap among the two groups and many of the subjects in the present study could be considered to be clinically depressed.

I-E Scores

The means and standard deviations of the I-E scores are presented in Table 6. Three analyses of variance were performed on these data: a sex x level of depression analysis was performed on all scores; within the depressed groups, a sex x treatment analysis was performed; and within the nondepressed groups, a sex x treatment analysis was performed. Results of these analyses are summarized in Table 7.

Results for the overall analysis indicated that females were more external than males ($F = 6.56$, $df = 1/124$, $p < .01$), and there was a tendency for depressed subjects to be more external than nondepressed subjects ($F = 2.91$, $df = 1/124$, $p < .09$). This main effect was modified, however, by the finding of a sex x depression interaction ($F = 9.63$, $df = 1/124$, $p = .002$), indicating that depressed males were

more internal than nondepressed males, while depressed females were more external than nondepressed females. The sex difference was significant within the depressed groups ($F = 15.26$, $df = 1/42$, $p < .001$), but not within the nondepressed groups.

Within the nondepressed groups, the treatment group main effect was significant ($F = 2.58$, $df = 4/70$, $p < .05$). Pairwise comparisons were performed using the Newman-Keuls procedure. Results indicated that subjects in the ND-IN-SO and ND-IN-AR groups had higher IE scores than the other three groups, and subjects in the ND-NN-O group had higher IE scores than the remaining two groups. Possible implications of these differences are discussed later (see Discussion).

SAT Scores

In order to obtain a rough estimate of intelligence, subjects were asked to report their SAT scores on the Information Sheet given at pretesting. Ninety-eight subjects, or 77% of the total subject group, were able to recall their SAT scores. The means, standard deviations and number of subjects per cell for SAT scores are presented in Table 8. In order to check the effectiveness of the random assignment of subjects to treatment groups with respect to SAT scores, three analyses of variance were performed on the data: a

sex x level of depression analysis was performed on all scores; a sex x treatment analysis was performed for subjects in the depressed groups; and a test for differences within treatment groups was performed for subjects within the nondepressed groups (the uneven distribution of missing scores within the nondepressed groups made a sex x treatment analysis unfeasible). Results of these analyses are presented in Table 9.

For the analysis of all scores, there was a marginally significant sex x level of depression interaction ($F = 3.03$, $df = 1/94$, $p = .09$) with depressed males reporting higher scores than depressed females, while nondepressed males reported slightly lower scores than nondepressed females. The sex difference was significant within the depressed groups ($F = 6.07$, $df = 1/37$, $p = .02$). No treatment main effects or interactions were significant.

Experience Ratings

During the pretesting subjects were asked to rate their degree of experience with anagrams or other word games on an 11-point Likert scale. The means and standard deviations of the experience ratings are presented in Table 10. Three analyses of variance were performed on these data: a sex x level of depression analysis was performed on all scores;

within the depressed groups, a sex x treatment analysis was performed; and within the nondepressed groups, a sex x treatment analysis was performed. The results of these analyses are summarized in Table 11.

Results indicated that, within the depressed groups, females reported having had more experience with anagrams than males, but this difference was only marginally significant ($F = 3.29$, $df = 1/42$, $p = .08$). No other effects approached significance.

The experience ratings were used as a covariate in all comparisons of performance measures on the anagram task.

Effects of Inescapable Noise Pretreatment

In this section results are presented for comparisons of the nondepressed groups pretreated with escapable noise, inescapable noise or no noise and not exposed to therapy (ND-EN-O, ND-IN-O, ND-NN-O). These comparisons test for effects of the different pretreatments.

Pretreatment phase. For subjects in the escapable noise pretreatment, number of trials to escape was defined as the trial number after which time the subject consistently escaped the tone. Several subjects, however, after escaping the tone reliably for a number of trials, had one or two failures to escape. These subjects appeared to be testing

to see whether the termination of the tone was, in fact, controlled by their own actions. One male subject, after learning to escape on trial #17, and escaping consistently for 20 trials, appeared to become bored and began to press different patterns, consequently failing to escape eight of the last thirteen trials. In view of the fact that all of these subjects had considerable experience with mastery of the task, the data for these subjects was included in the final sample. As mentioned previously, one male subject in the escapable noise group failed to learn to shut off the noise and consequently was replaced (he solved the pattern correctly one time, but failed to replicate the solution during any subsequent trial). For those subjects who learned the correct pattern, the number of trials to learn to escape ranged from three to seventeen (mean = 10.0).

Anagram performance. It was predicted that among the no treatment groups, nondepressed subjects in the inescapable noise group should exhibit longer latencies in solving anagrams and should fail to solve more anagrams than the nondepressed-no noise and nondepressed-escapable noise groups. Results failed to confirm this prediction. The means and standard deviations for the anagram performance measures for the pretreatment test groups are presented in Table 12.

A pretreatment (escapable versus inescapable versus no

noise) x sex analysis of covariance (with the experience ratings obtained during pretesting used as a covariate) indicated no differences in number of anagrams correctly solved, total time to solve all anagrams, number of post-failure anagrams solved, or time to solve postfailure anagrams. A summary of the analyses of covariance for the four dependent measures is presented in Table 13.

Mood data. The means and standard deviations of the mood ratings for the pretreatment test groups are presented in Tables 14 to 18. A repeated measures analysis of variance (sex x pretreatment) was conducted for each of the five mood questions. Summaries of these analyses of variance are presented in Tables 19 to 23. There were no significant sex or pretreatment main effects for any of the dependent measures. Differential reactions to the pretreatment conditions should be reflected as pretreatment x phase interactions. Only two such interactions approached significance: phase x pretreatment for ratings of seriousness ($F = 1.82$, $df = 6/126$, $p = .10$); and phase x sex x pretreatment for ratings of effectiveness ($F = 2.01$, $df = 6/126$, $p = .07$). These two results were further examined by conducting analyses of variance for ratings of seriousness and effectiveness at each phase.

For ratings of effectiveness, there was a significant

sex x pretreatment interaction at the initial testing ($F = 3.39$, $df = 2/42$, $p = .04$). The females in the ND-EN-O group rated themselves as lowest in feelings of effectiveness and the males in the ND-EN-O group rated themselves as highest in feelings of effectiveness. Since the groups had not received any differential treatment at this point, it is likely that this difference was due to chance.

For ratings of seriousness, there was a significant treatment effect following the therapy phase ($F = 3.38$, $df = 2/42$, $p = .04$) with subjects in the ND-IN-O group rating themselves as less serious than subjects in the other two groups. While these three groups received identical treatment during the therapy phase (a control task), it is conceivable that the difference observed in ratings of seriousness reflects a delayed reaction to the pretreatment, with subjects who had received an inescapable noise pretreatment reporting themselves as feeling less serious than the other two groups.

Main effects for phase were found for three of the mood questions: communicativeness ($F = 3.94$, $df = 3/126$, $p = .01$), seriousness ($F = 3.03$, $df = 3/126$, $p = .03$), and anger ($F = 4.97$, $df = 3/126$, $p = .003$). For these dependent measures, the Newman-Keuls procedure was used to test for differences between all possible pairs of means. Results indicated that subjects felt more communicative and more

serious during the initial testing than during any subsequent phase; subjects felt angrier following the pretreatment phase than they did following the initial testing or the therapy phase; and subjects felt angrier following the anagram test than during pretesting.

Attribution data. The means and standard deviations of the attribution ratings for the tests for pretreatment effects are presented in Tables 24 to 27. A repeated measures analysis of variance (sex x pretreatment) was conducted for each of the four attribution questions. Summaries of these analyses of variance are presented in Tables 28-31.

As part of the attribution rating questionnaire, subjects were asked to rate their own level of performance on a 7-point Likert scale (1 = very poorly, 7 = very well), and to determine whether or not their level of performance on the task was being evaluated (1 = no, 2 = yes). These last two questions were included as checks on experimental manipulations. The self-rating of performance question provides a check on the effectiveness of the experimental manipulation of success and failure at the various tasks, while the evaluativeness question checks whether control tasks were perceived as being nonevaluative relative to experimental tasks. Since the influence of level of depression and/or sex on ratings of performance and task

evaluativeness were felt to have potential usefulness in clarifying attributional processes, the data from these two questions are discussed with the attribution data. The means and standard deviations of the task rating questions for the pretreatment test groups are presented in Tables 32 and 33. Summaries of the repeated measures analysis of variance (sex x pretreatment) for the two task questions are presented in Tables 34 and 35.

The following is a summary of all significant and marginally significant effects. For subjects' ratings of the importance of ability, there was a significant phase main effect ($F = 96.59$, $df = 2/84$, $p < .001$). For ratings of the importance of task difficulty, the sex x pretreatment interaction approached significance ($F = 2.50$, $df = 2/42$, $p = .10$), as did the phase x sex x pretreatment interaction ($F = 2.01$, $df = 4/84$, $p = .10$). The phase main effect was significant ($F = 40.22$, $df = 2/84$, $p < .001$), as was the phase x pretreatment interaction ($F = 4.05$, $df = 4/84$, $p = .005$). For ratings of the importance of effort, the phase main effect was significant ($F = 27.01$, $df = 2/84$, $p < .001$). For ratings of the importance of luck, the pretreatment effect was significant ($F = 11.61$, $df = 2/42$, $p < .001$), the phase main effect was significant ($F = 36.72$, $df = 4/84$, $p < .001$), and the phase x pretreatment interaction was significant ($F = 11.81$, $df = 4/84$, $p < .001$).

For subjects' self-ratings of their level of performance, the pretreatment main effect approached significance ($F = 2.69$, $df = 2/42$, $p = .08$), the phase main effect was significant ($F = 6.48$, $df = 2/84$, $p = .002$), and the phase x pretreatment interaction was significant ($F = 8.59$, $df = 4/84$, $p < .001$). For ratings of task evaluativeness, the phase main effect was significant ($F = 18.90$, $df = 2/84$, $p < .001$).

As with the mood data, all effects that reached conventional levels of significance, or approached significance, were further examined by conducting analyses of variance on that dependent measure at each phase. For ease of understanding subjects' attributional analyses of the various tasks, the discussion is organized so that results for all dependent measures are discussed together for each phase.

Pretreatment phase. Following the pretreatment, subjects who had received inescapable noise rated themselves as having performed less well than subjects in the escapable noise or no treatment control groups ($F = 12.99$, $df = 2/42$, $p < .001$). This suggests that the inescapable noise pretreatment was effective in inducing perceptions of failure in these subjects. It should be noted, however, that the pretreatment groups did not differ in their ratings of the evaluativeness of the task, as had been expected. There was a significant treatment effect for ratings of the importance of task difficulty ($F = 4.39$, $df = 2/42$, $p = .02$),

with subjects in the inescapable noise group most likely to attribute the outcome to task difficulty, and subjects in the control group least likely to attribute the outcome to task difficulty. The difference in ratings of the importance of task difficulty between subjects in the control group (where subjects were asked to create a "Morse Code") and the experimental groups (where subjects were asked to discover the correct pattern on a button-pressing task) is easily understandable in terms of the difference between the two tasks. For the two experimental groups, however, the task was identical, so that differences in ratings of task difficulty must reflect reactions to the success-failure manipulation. This finding confirms previous reports (Weiner et al., 1971) that subjects attribute failure to task difficulty more than they attribute success to task ease.

There was also a significant sex x treatment interaction for ratings of task difficulty ($F = 4.14$, $df = 2/41$, $p = .02$), with males in the escapable noise group attributing outcome more to task than males in the control group, and females in the escapable noise group attributing outcome less to task than females in the control group.

Finally, subjects in the control group were less likely to attribute outcome to luck than were subjects in the two experimental groups ($F = 25.68$, $df = 2/42$, $p < .001$). Again, this finding is readily understandable in terms of the nature

of the two tasks. Clearly, correctly guessing a random pattern is a task that is heavily dependent on luck, whereas devising a code for the alphabet can be seen as depending very little on luck.

Therapy phase. There were no significant differences in any of the attribution or task ratings following the therapy phase. The reader is reminded that all subjects involved in tests for pretreatment effects received a neutral control task at this phase (pattern complexity-preference), so that differences in attributional ratings would not be expected.

Anagram test. Following the anagram test, subjects in the control group attributed outcome less to ability than did subjects in the other two groups ($F = 4.74$, $df = 2/42$, $p = .01$).

Phase main effects. Main effects for phase were found for all of the attribution and task ratings. The Newman-Keuls procedure was used to test for differences between all possible pairs of means. Subjects felt they had performed better at the pattern complexity-preference task than at the pretesting or anagram testing; they rated the anagram test as most evaluative and the pattern complexity-preference task as least evaluative; subjects attributed outcome to ability most for the anagram test and least for the pattern complexity-preference task; attributed outcome to effort most

for the anagram test; and attriubted outcome to luck most for the pretreatment task and least for the pattern complexity-preference task.

Depressed versus Nondepressed Subjects

The reader is reminded that depressed subjects were all treated identically at the pretreatment phase with the neutral "Morse Code" task, and were not exposed to the aversive noise. At the therapy phase, the depressed subjects were divided into three groups: one receiving success only experiences, one receiving attribution retraining, and the third receiving no therapy. In this section, comparisons are made between depressed subjects receiving no therapy and nondepressed subjects who received no noise and no therapy.

Anagram performance. It was predicted that depressed subjects receiving no therapy should exhibit longer latencies in solving anagrams and should fail to solve more anagrams than nondepressed subjects receiving no noise and no therapy. Results failed to confirm this prediction. A sex x level of depression analysis of covariance indicated no differences among groups on any of the four performance measures. Means and standard deviations for the anagram performance measures are presented in Table 36. A summary of the analyses of

covariance is presented in Table 37.

Mood data. The means and standard deviations of the mood ratings for the depression effects groups are presented in Tables 38 to 42. A repeated measures analysis of variance (sex x level of depression) was conducted for each of the five mood questions. Summaries of these analyses of variance are presented in Tables 43 to 47.

There were no significant sex main effects for any of the dependent measures. The depression main effect was significant only for ratings of sadness ($F = 4.10$, $df = 1/28$, $p = .05$), with depressed subjects rating themselves as sadder overall than nondepressed subjects. No interaction effects approached significance.

Main effects for phase were found for ratings of sadness ($F = 2.93$, $df = 3/84$, $p = .04$) and anger ($F = 3.79$, $df = 3/84$, $p = .01$). For these dependent measures, the Newman-Keuls procedure was used to test for differences between all possible pairs of means. Results indicated that subjects felt sadder following the anagram testing than they did following the pretreatment or therapy phases. Subjects also felt angrier following the anagram testing than they did at any of the other three ratings.

Attribution data. The means and standard deviations of the attribution ratings and the task ratings for the depression

effects groups are presented in Tables 48 to 53. Repeated measures analyses of variance (sex x level of depression) were conducted for each of the four attribution questions and for the two task questions. Summaries of these analyses of variance are presented in Tables 54 to 59. Following is a summary of all effects that reached or approached conventional levels of significance.

There was a significant phase main effect for ratings of the importance of ability ($F = 32.75$, $df = 2/56$, $p < .001$). For ratings of the importance of task difficulty, there was a significant phase main effect ($F = 11.73$, $df = 2/56$, $p < .001$), and the phase x level of depression interaction approached significance ($F = 2.91$, $df = 2/56$, $p = .06$). For ratings of effort, there was a significant main effect due to level of depression ($F = 5.93$, $df = 1/28$, $p = .02$), a significant phase main effect ($F = 7.52$, $df = 2/56$, $p = .001$), and a significant phase x level of depression interaction ($F = 4.78$, $df = 2/56$, $p = .01$). Finally, there was a significant phase main effect on ratings of the importance of luck ($F = 9.19$, $df = 2/56$, $p < .001$). For the task ratings, there was a significant phase main effect for subjects' ratings of their level of performance ($F = 17.94$, $df = 2/56$, $p < .001$). For ratings of the evaluativeness of the task, the sex x level of depression interaction approached significance ($F = 3.72$, $df = 1/28$, $p = .06$), the phase main

effect was significant ($F = 14.96$, $df = 2/56$, $p < .001$), and the phase x sex x level of depression interaction approached significance ($F = 2.71$, $df = 2/56$, $p = .08$).

All effects that reached conventional levels of significance or approached significance were further examined by conducting analyses of variance on that dependent measure at each phase. Results are organized so that results for all dependent measures are discussed together for each phase.

Pretreatment phase. Following the pretreatment phase (where all subjects in these groups received the neutral "Morse Code" task), depressed subjects attributed their performance to effort ($F = 16.52$, $df = 1/28$, $p < .001$) and to task difficulty ($F = 2.87$, $df = 1/28$, $p = .10$) to a greater extent than did nondepressed subjects. There was also a significant sex x level of depression interaction for ratings of the evaluativeness of the task ($F = 8.79$, $df = 1/28$, $p = .006$). Depressed males rated the task as more evaluative than nondepressed males, while depressed females rated the task as less evaluative than nondepressed females.

Therapy phase. Following the therapy phase (where all subjects in these groups received the neutral pattern complexity-preference task), there were no significant differences in any of the attribution or task ratings.

Anagram test. Following the anagram test, there were

no significant differences in any of the attribution or task ratings.

Phase main effects. Phase main effects were significant for all of the attribution and task ratings. The Newman-Keuls procedure was used to test for differences between all possible pairs of means. Results indicated that subjects felt that they had performed less well at the anagram task than at either of the previous tasks; the anagram task was rated most evaluative and the pattern complexity-preference task as least evaluative; outcome was attributed to ability most for the anagram task and least for the pattern complexity-preference task; and outcome was attributed to task difficulty, effort and luck more for the anagram task than for either of the other tasks.

Correlation of SDS Scores with Performance Measures

It had been predicted that higher SDS scores, reflecting increasing depth of depression, should correlate with degree of impairment on the anagrams. The correlation of SDS scores with performance measures for control groups only and for all groups was computed and is presented in Tables 60 and 61.

When performance scores were correlated with SDS scores for the depressed and nondepressed control groups only (those subjects who were not exposed to either aversive noise

or therapy), results failed to confirm the prediction. SDS scores did not correlate significantly with number of anagrams correctly solved, total time, total time following failure, or number solved following failure.

When performance scores for all subjects were considered, however, results confirmed the prediction outlined above. The higher the SDS score, the fewer the number of anagrams correctly solved ($r = -0.18$, $p = .04$), and the greater the total time taken to complete the anagram task ($r = 0.18$, $p < .05$). The correlations between SDS scores and number of anagrams solved following failure ($r = -0.13$, $p = .16$), and time taken to solve anagrams following failure ($r = 0.16$, $p = .08$) were in the predicted direction, but were only marginally significant.

It appears, then, that while increasing depth of depression was not associated with impaired performance on the anagrams for control subjects, it was reflected in depressed subjects showing a poorer response to treatment than non-depressed subjects previously exposed to inescapable noise. Some possible explanations for these findings are discussed below (see Discussion).

Effects of the Different Therapies

It had been predicted that a helplessness inducing pretreatment and naturally occurring depression would

produce parallel performance deficits relative to control subjects. Based on these expectations, predictions had been made regarding the relative effectiveness of success only and attribution retraining therapy procedures in reversing deficits in these subjects. However, since the data failed to indicate any performance deficits among groups compared on the basis of level of depression, or among groups given different pretreatment experiences, these later questions were not pursued as initially outlined. Instead, the data for the depressed subjects given therapy experiences and nondepressed subjects given inescapable noise pretreatment followed by therapy experiences was combined. Analyses were performed on the combined data to examine the effects of sex, level of depression and therapy experience on mood, attribution and performance.

Therapy phase. The number of block design problems correctly solved by subjects in the success only groups (with 20 being the maximum possible) ranged from four to twenty (mean = 16.78). For the attribution retraining groups, the number correctly solved (with 18 being the maximum possible) ranged from eight to eighteen (mean = 15.34). Overall, 537 of 640 block design problems in the success only conditions were successfully solved (84%) and 491 of 576 block design problems in the attribution retraining conditions were successfully solved (85%).

Scores for subjects in the attribution retraining groups were multiplied by 10/9 in order to permit comparison of the two treatments. Means and standard deviations for the adjusted block design scores are presented in Table 62. A three-way (sex x level of depression x therapy) analysis of variance was conducted and is summarized in Table 63. Males had somewhat higher scores than females, although this difference was only marginally significant ($F = 3.66$, $df = 1/56$, $p = .06$). No other differences approached significance.

Anagram performance. The means and standard deviations of the performance measures for comparison of therapy effects are presented in Table 64. A three-way analysis of covariance (sex x level of depression x therapy) was performed for each of the four dependent measures. A summary of these analyses is presented in Table 65.

Results indicated a main effect for depression on all four of the performance measures, although the effect was significant only for total time. Compared to nondepressed subjects, the depressed subjects solved fewer anagrams ($F = 3.90$, $df = 1/55$. $p = .05$), took longer to solve the set of anagrams ($F = 5.18$, $df = 1/55$, $p = .03$), solved fewer anagrams following failure ($F = 3.08$, $df = 1/55$, $p = .09$), and took longer to solve the anagrams following failure ($F = 3.70$, $df = 1/55$, $p = .06$).

The main effect for therapy condition approached

significance for only one measure, with subjects in the success only groups tending to solve more anagrams following failure than subjects in the attribution retraining groups ($F = 2.75$, $df = 1/55$, $p = .10$).

There were no main effects for sex on any of the performance measures.

The sex x therapy interaction was significant for two of the performance measures and approached significance for one other measure. Males solved more anagrams than females following attribution retraining, while females solved more anagrams than males following success only experiences ($F = 7.44$, $df = 1/55$, $p = .009$). Males also solved more postfailure anagrams than females following attribution retraining while females solved more postfailure anagrams than males following success only ($F = 4.92$, $df = 1/55$, $p = .03$). The sex x therapy interaction approached significance for total time taken to solve anagrams ($F = 2.34$, $df = 1/55$, $p = .13$) with males taking longer following success only, while females took longer following attribution retraining. The pattern of results was the same for time to solve postfailure anagrams, but the difference did not approach significance.

Mood data. The means and standard deviations of the mood ratings for the tests for therapy effects are presented in

Tables 66 to 70. A three-way repeated measures analysis of variance (sex x level of depression x therapy) was conducted for each of the five mood questions. Summaries of these analyses of variance are presented in Tables 71-75. Where the repeated measures analysis of variance indicated significant effects, or effects approaching significance, analyses of variance were conducted at each phase for that dependent measure.

Differences among groups in self-rated affect primarily occurred in the comparison of depressed and nondepressed subjects. Results of the repeated measures analysis of variance indicated that depressed subjects felt less communicative than nondepressed subjects ($F = 8.53$, $df = 1/56$, $p < .005$). Individual analyses indicated that this difference was significant at pretesting ($F = 15.79$, $df = 1/56$, $p < .001$) and following therapy ($F = 11.28$, $df = 1/56$, $p = .001$), and approached significance following the anagram task ($F = 3.73$, $df = 1/56$, $p = .06$). There was no significant difference between depressed and nondepressed subjects in feelings of communicativeness following the pretreatment phase.

The repeated measures analysis of variance indicated that depressed subjects rated themselves as sadder than nondepressed subjects ($F = 21.52$, $df = 1/56$, $p < .001$). Individual analyses indicated that this difference was

significant during pretesting ($F = 27.35$, $df = 1/56$, $p < .001$), pretreatment ($F = 9.96$, $df = 1/56$, $p = .003$), therapy ($F = 11.36$, $df = 1/56$, $p < .001$), and anagrams ($F = 7.71$, $df = 1/56$, $p = .007$).

There was a marginally significant main effect for depression in ratings of effectiveness ($F = 3.08$, $df = 1/56$, $p = .09$) in the repeated measures analysis, with depressed subjects feeling less effective overall than nondepressed subjects. This difference was accounted for by depressed subjects feeling less effective following therapy ($F = 3.08$, $df = 1/56$, $p = .09$), and following anagrams ($F = 5.31$, $df = 1/56$, $p = .03$).

Finally, the repeated measures analysis indicated that depressed subjects felt angrier overall than nondepressed subjects ($F = 10.93$, $df = 1/56$, $p = .002$). This difference was significant at pretesting ($F = 21.95$, $df = 1/56$, $p < .001$), therapy ($F = 5.05$, $df = 1/56$, $p = .03$), and anagrams ($F = 11.19$, $df = 1/56$, $p = .001$).

Considered together, these results suggest that the inescapable noise pretreatment, while failing to produce performance deficits on a later task (anagrams), did in fact produce a temporary effect on subjects' moods. Depressed subjects felt less communicative and more angry than non-depressed subjects during all other phases, and felt less effective following evaluative tasks (therapy and anagrams)

than nondepressed subjects. Following the pretreatment phase, however (where nondepressed subjects were exposed to inescapable noise while depressed subjects performed a neutral task), there was no difference between depressed and nondepressed subjects in feelings of communicativeness, effectiveness and anger.

One important exception to these findings, however, was the pattern for self-rated sadness. Depressed subjects rated themselves as feeling significantly sadder than non-depressed subjects at all phases, including the pretreatment phase. Implications of this finding will be discussed further below.

There was a marginally significant depression x therapy interaction for feelings of sadness in the repeated measures analysis ($F = 2.98$, $df = 1/56$, $p = .09$), with depressed subjects feeling sadder in the success only group than in the attribution retraining group, while nondepressed subjects were sadder in the attribution retraining group than in the success only group. This interaction was marginal at pre-testing ($F = 2.84$, $df = 1/56$, $p = .09$), and significant following therapy ($F = 4.33$, $df = 1/56$, $p = .05$). Since the groups had not been exposed to different treatments prior to the initial testing, it is difficult to explain the initial difference.

Finally, the repeated measures analysis indicated a

significant phase x sex x depression x treatment interaction for feelings of seriousness ($F = 2.88$, $df = 3/168$, $p = .04$), with depressed males more serious in the success only group and nondepressed males more serious in the attribution retraining group, while depressed females were more serious in the attribution retraining group, and nondepressed females were more serious in the success only group. The interaction was significant following the therapy phase ($F = 5.65$, $df = 1/56$, $p = .02$), and the anagram phase ($F = 4.58$, $df = 1/56$, $p = .04$).

Main effects for phase were found for four of the five mood questions: communicativeness ($F = 10.65$, df 3/168, $p < .001$), sadness ($F = 12.76$, $df = 3/168$, $p < .001$), effectiveness ($F = 9.12$, $df = 3/168$, $p < .001$), and anger ($F = 10.34$, $df = 3/168$, $p < .001$). For these dependent measures the Newman-Keuls procedure was used to test for differences between all possible pairs of means. Results indicated that subjects felt more communicative at pretesting and following therapy than they did following pretreatment or anagrams; subjects felt happier following the therapy phase and saddest following the anagram phase; subjects felt most effective following the therapy phase; and subjects felt angriest following the anagram testing.

Attribution data. The means and standard deviations of the attribution ratings and task ratings for the comparison of

therapy effects are presented in Tables 76 to 81. Repeated measures analyses of variance (sex x level of depression x therapy) were conducted for each for the four attribution questions and for the two task questions. Summaries of these analyses of variance are presented in Tables 82 to 87. Following is a summary of all effects that reached or approached conventional levels of significance.

For ratings of ability, there was a marginal main effect due to level of depression ($F = 3.07$, $df = 1/56$, $p = .09$), a significant sex x depression x therapy interaction ($F = 4.58$, $df = 1/56$, $p = .04$), and a significant phase main effect ($F = 106.28$, $df = 2/112$, $p < .001$). For ratings of task difficulty, there was a significant phase main effect ($F = 45.49$, $df = 2/112$, $p < .001$). For ratings of effort there was a significant sex main effect ($F = 4.20$, $df = 1/56$, $p = .05$), a significant sex x depression interaction ($F = 7.17$, $df = 1/56$, $p = .01$), and a significant phase main effect ($F = 53.13$, $df = 2/112$, $p < .001$). For ratings of luck there was a marginal sex main effect ($F = 3.02$, $df = 1/56$, $p = .09$), a significant depression main effect ($F = 5.68$, $df = 1/56$. $p = .02$), a significant phase main effect ($F = 16.47$, $df = 2/112$, $p < .001$), and a significant phase x depression interaction ($F = 24.99$, $df = 2/112$, $p < .001$). For self-ratings of performance, there was a significant main effect ($F = 77.02$, $df = 2/112$, $p < .001$), and a

significant phase x depression interaction ($F = 27.04$, $df = 2/112$, $p < .001$). For ratings of the evaluativeness of the task, there was a marginal depression main effect ($F = 3.85$, $df = 1/56$, $p = .06$), and a significant phase main effect ($F = 21.70$, $df = 2/112$, $p < .001$).

All effects that reached conventional levels of significance or approached significance were further examined by conducting analyses of variance on that dependent measure at each phase. Results are organized so that results for all dependent measures are discussed together for each phase.

Pretreatment phase. At the pretreatment phase, depressed subjects were given the neutral "Morse Code" task while nondepressed subjects were exposed to inescapable noise via the unsolvable button-pressing task. Following pretreatment, the depressed subjects rated their performance higher than did the nondepressed subjects ($F = 24.74$, $df = 1/56$, $p < .001$), and nondepressed subjects were more likely to view the task as having been evaluative ($F = 3.86$, $df = 1/56$, $p = .05$). These results confirm the effectiveness of the relative neutrality of the "Morse Code" task and the effectiveness of the inescapable tone in inducing cognitions of failure.

Depressed subjects were more likely to attribute the outcome to ability ($F = 3.86$, $df = 1/56$, $p = .06$) and

nondepressed subjects were more likely to attribute the outcome to luck ($F = 27.68$, $df = 1/56$, $p < .001$). Both of these differences are readily understandable in terms of the different demands of the two tasks.

Finally, there was a tendency for females to attribute outcome more to effort than males ($F = 2.77$, $df = 1/56$, $p = .10$), and a marginal sex x depression interaction for ratings of effort ($F = 3.62$, $df = 1/56$, $p = .06$), with depressed males attributing outcome more to effort than depressed females, while nondepressed males attributed outcome less to effort than nondepressed females. The significance of effort attributions will be discussed later.

Therapy phase. Following the therapy phase, depressed subjects attributed outcome more to effort ($F = 3.71$, $df = 1/56$, $p = .06$) and to luck ($F = 3.49$, $df = 1/56$, $p = .07$) than did nondepressed subjects. Similarly, females attributed outcome on the therapy task more to effort ($F = 2.78$, $df = 1/56$, $p = .10$) and to luck ($F = 4.41$, $df = 1/56$, $p = .04$) than did males. Note that depressed subjects and females demonstrate a similar attributional pattern; that is, given a success experience (recall that subjects were told that they had scored in the 93rd percentile on the block design task), these subjects attribute outcome to unstable factors to a greater extent than do

nondepressed or male subjects. Implications of these similarities will be discussed later (see Discussion).

The therapy main effect approached significance for ratings of effort, with subjects in the attribution retraining condition attributing outcome more to effort than subjects in the success only conditions ($F = 3.71$, $df = 1/56$, $p = .06$). This result reflects the success of the attributional manipulation.

The sex x depression interaction was also significant for ratings of the impact of effort ($F = 5.95$, $df = 1/56$, $p = .02$), with depressed males rating effort a more important factor than depressed females, while nondepressed males rated effort a less important factor than nondepressed females.

Anagram test. Depressed subjects tended to evaluate their own performance less positively than nondepressed subjects ($F = 2.18$, $df = 1/56$, $p = .15$). The sex x therapy interaction also approached significance ($F = 2.70$, $df = 1/56$, $p = .11$), with males rating their performance higher than females in the attribution retraining group, while females rated their performance higher than males in the success only group. The reader should note that these self-evaluations parallel the actual results for performance measures.

Phase main effects. Phase main effects were significant

for all of the attribution and task ratings. The Newman-Keuls procedure was used to test for differences between all possible pairs of means. Results indicated that outcomes during the pretreatment phase were attributed less to ability, less to task difficulty, less to effort and more to luck than were outcomes at therapy and anagram testing. The pretreatment tasks were also less likely to be viewed as evaluative than were the therapy and anagram tasks. Finally, subjects felt that they had performed best at the therapy task and worst at the anagram test.

Credibility of Experimental Manipulations

At several points in the experiment deception played an important role in the experimental manipulations. During the pretreatment phase, subjects in the inescapable noise groups were asked to believe that pressing a correct pattern of lights would terminate a noxious tone, when in fact, no action on the subjects' part could affect the presentation of the tone. During the therapy phase, subjects in the therapy groups were given false feedback indicating that they had scored in the 93rd percentile of all subjects previously tested on the task. In addition, subjects in the attribution retraining condition were failed on two of the block design items by being told that time had run out before they could complete the design. Finally, as part

of the anagram task, two unsolvable anagrams were interspersed among the solvable anagrams.

In order to provide a stringent test of the credibility of these manipulations, subjects were asked to complete a probing final questionnaire regarding their reactions to the experiment (see Appendix I). It was found that 37 subjects reported some degree of suspicion about some portion of the experiment. From subjects' comments on the questionnaire and during the final debriefing, the subjects' suspicions were divided into four categories: suspicions regarding the tone (N = 14); suspicions regarding the percentile feedback (N = 6); suspicions regarding the anagrams (N = 13); and suspicions regarding unrelated aspects of the experiment (N = 9). Five subjects reported more than one source of suspicion. No subject reported being suspicious of the false failures on the attribution retraining task. The distribution of subjects reporting suspicion regarding the pretreatment, therapy and anagram tasks is presented in Table 88. The "unrelated suspicions" included such things as subjects feeling that they had been deceived because "the multiple choice questions were too extreme"; "I haven't been told what the experiment was about"; and "I'm suspicious of all psychology experiments". It was felt that these suspicions were not likely to have affected the dependent measures and they were consequently disregarded

in further analyses.

For both the false percentile feedback and the anagram task, the percent of subjects reporting suspicion (9% and 10% respectively) was judged to be too small to have significantly affected results. (Parenthetically, it should be noted that during debriefing, subjects who had expressed suspicion regarding the solvability of the anagrams were asked to identify those items which they felt were unsolvable. All subjects thus questioned selected anagrams with only one vowel as being unsolvable. All of these items were, in fact, solvable. No subject correctly identified the unsolvable anagrams.) The percent of subjects reporting suspicion about the inescapable tone, however, was quite large (29%). Consequently, t-tests were conducted on all measures administered after the pretreatment task for suspicious versus nonsuspicious subjects in the ND-IN-SO, ND-IN-AR and ND-IN-O groups.

The results indicated significant differences between the suspicious versus nonsuspicious subjects on 7 out of 120 dependent measures. Following the pretreatment task, suspicious subjects attributed outcome less to effort than did nonsuspicious subjects in the ND-IN-SO group; suspicious subjects in the ND-IN-AR group were less likely than nonsuspicious subjects to view the task as being evaluated; and suspicious subjects in the ND-IN-AR group reported

themselves to be less serious and less sad than were non-suspicious subjects. Following the therapy task, suspicious subjects in the ND-IN-O group rated their own performance lower than did nonsuspicious subjects. Following the anagram task, suspicious subjects in the ND-IN-SO group attributed outcome less to luck than did nonsuspicious subjects. Finally, suspicious subjects in the ND-IN-O group attributed more scientific value to the experiment than did nonsuspicious subjects.

Those differences that occurred immediately following the pretreatment task indicate that subjects who were suspicious of their ability to control the tone were less upset by their failure, took the task less seriously and took less personal responsibility for the failure. The three other significant effects are less readily explainable.

In view of the fact that none of the anagram performance measures were affected by subjects' suspicions regarding the pretreatment manipulation, and that only 7 of 120 (less than 6%) t-tests performed reached conventional levels of significance, it can be concluded that the credibility of the pretreatment task was not a significant factor in determining later responses.

It is interesting to note the distribution of subjects reporting suspicion on the various task. Given a pretreatment task where subjects were induced to fail, nondepressed

males were more likely than nondepressed females to report being suspicious (5:2). On the therapy task, however, where subjects were led to believe that their performance had been superior, females were more likely than males (2:1) and depressed subjects were more likely than nondepressed subjects (5:1) to be suspicious of the positive feedback. While the male-female difference on the block design task can be attributed to differences in actual performance level (males performed better on the block design task than females), the male-female difference on the inescapable tone and the depressed-nondepressed difference on the percentile feedback cannot be so readily dismissed. This pattern provides further suggestive evidence of a similarity between nondepressed females and depressed subjects in taking personal responsibility for failure while failing to take credit for success.

As part of the debriefing, subjects were also asked to rate the degree to which they enjoyed participating in the experiment and the amount of scientific value they attributed to the experiment. Analyses of these data by sex, pretreatment condition, level of depression or therapy condition revealed no differences in subjects' ratings of enjoyment or the value of the experiment.

Intercorrelations

Intercorrelations among all measures obtained during

pretesting and anagram performance measures were computed and are presented in Table 89.

As would be expected, SDS scores correlated significantly with self-rated sadness (r = -.37, p < .001). Increasing depth of depression was also associated with a tendency to feel less communicative (r = .30, p <.001) and more angry (r = .21, p = .02). SDS scores did not significantly correlate with seriousness (r = -.02, p = .82) or effectiveness (r = .13, p = .14). The correlations between most of the mood questions were significant: the sadder the subjects rated themselves, the less communicative they felt (r = -.22, p = .01), and the angrier they felt (r = -.50, p < .001); and the less communicative they rated themselves, the less effective they felt (r = .36, p < .001).

As mentioned previously, SDS scores also correlated significantly with the anagram performance measures, with more depressed subjects tending to perform less well. Feelings of communicativeness and effectiveness similarly correlated with the performance measures. Feelings of seriousness did not correlate with any of the other mood or performance measures.

As has been found in previous research (Abramowitz, 1969; Hale, 1975; Tennen, 1976), the SDS scores significantly correlated with scores on the I-E scale (r = .22, p = .01), indicating that self-reported depression is associated with

a tendency to view reinforcements as external to one's own control. As noted above, however, this association is accounted for primarily by the females. The analysis of variance of I-E scores indicated a sex x depression interaction with depressed males actually scoring more internal than nondepressed males, while depressed females were more external than nondepressed females. This finding is discussed further below.

Intercorrelations among the anagram performance measures were all significant.

Finally, subjects' report of the amount of their prior experience with anagrams correlated significantly with total number of anagrams solved (r = .19, p = .03), total time (r = -.23, p = .008), and total time following failure (r = -.20, p = .02). The correlation between experience ratings and number of anagrams correct following failure was in the predicted direction but was not significant (r = .13, p = .14). These correlations reflect the validity of the experience rating as a covariate in the analysis of anagram performance measures.

CHAPTER IV

DISCUSSION

Major Findings

The present study had predicted that depressed subjects would demonstrate performance deficits on a cognitive task relative to nondepressed subjects. Subjects exposed to uncontrollable outcomes on one task were expected to demonstrate deficits relative to control subjects parallel to that of depressed subjects. It was expected that mastery experiences would raise expectancies for future success and improve the performance of both helpless and depressed subjects. Furthermore, it was hypothesized that, whereas learned helplessness reflects a general belief in uncontrollability, depression represents a special case of this belief whereby failure is attributed to the self. Based on this distinction, it had been predicted that a procedure which enhances internal attribution for failure would exacerbate the depressives' tendency toward self-blame, and would have a negative effect on subsequent performance. Helpless subjects, on the other hand, were expected to benefit from retraining that outcomes are under personal control.

Three major findings emerged from the data: the failure to find performance deficits as a function of prior exposure

to uncontrollable outcomes; the finding of performance differences as a function of level of depression only in those groups previously exposed to a therapy procedure; and the finding of sex differences in attribution and in performance.

The discussion of the major findings is divided into three sections, each addressed to one of these issues. Two major assertions are proposed to account for all of the findings. First, it is suggested that the learned helplessness model of depression needs to be reformulated to take into account attributional processes. It is noted that Abramson et al. (1978) have recently proposed such a reformulation which is consistent with, although more far-reaching than the model suggested in the present study. Second, sex differences in attributional style, in depression and in response to the different therapies are noted and preliminary efforts are made to suggest a model to account for these findings.

Effects of inescapable noise pretreatment. The results of the present study failed to confirm the prediction that subjects pretreated with inescapable noise would show deficits on later cognitive problems relative to a control group that had not been exposed to noise or a group exposed to escapable noise.

The failure to obtain the learned helplessness effect appears to reflect some confusion in the literature regarding the definition of learned helplessness which has recently been clarified by the reformulated model proposed by Abramson et al.

In the early helplessness studies (for example, Hiroto and Seligman, 1975), it was suggested that helplessness learned in one situation generalized to other situations and could be considered to be an "induced trait".

In their evaluation of learned helplessness studies, Wortman and Brehm (1975) had contended that learning deficits displayed in the same situation in which uncontrollability occurred was a "trivial" phenomenon and that helplessness was of interest only to the extent that it could be demonstrated to be an "irrational belief" which occurs in a new situation in which control is, in fact, possible. As discussed previously, they proposed a model whereby expectation of control, importance of the outcome and amount of helplessness training interact to determine reaction to uncontrollability.

Based on Wortman and Brehm's model, each phase of the present study involved a different task presented in a different room by a different experimenter. It was expected that the large number of exposures to uncontrollable noise (and hence the <u>intensity</u> of the experienced helplessness)

would produce sufficient generalization to demonstrate helplessness in the later setting.

Abramson et al.'s reformulated model presents helplessness as a "logical" (albeit not necessarily veridical) expectation of uncontrollability which follows from the attributions the subject makes in a situation which is perceived to be uncontrollable. The range of situations over which performance deficits occur is considered irrelevant to demonstrating helplessness; the defining characteristics are the belief in uncontrollability coupled with performance deficits.

Following Weiner's model of attribution theory, the authors propose that the stability of subject attributions for uncontrollability determine the chronicity of deficits in the situation in which uncontrollability occurs, with attributions to stable factors (task and ability) resulting in more persistent deficits than attributions to unstable factors (effort and luck).

In the present study, subjects in the three inescapable noise groups (ND-IN-O, ND-IN-SO, ND-IN-AR) attributed their failure at the pretreatment task primarily to luck (an external, unstable attribute) and least to ability (an internal, stable attribute). Given this attribution pattern, it is likely that the failure experience had little effect on subjects' expectancies for success at a later task.

A recent study by Litman-Adizes (1978) reported results similar to those of the present study. The author found that subjects who failed at a task and who attributed their failure to unstable factors did not show performance deficits on a subsequent task.

Abramson et al. have, in addition, proposed a new dimension of attribution, "global-specific" which is orthogonal to the "internal-external" and "stable-unstable" dimensions. This new dimension is proposed to determine the extent to which reactions to uncontrollability will generalize to new situations with generalization being greater the more global the attribute. For example:

> Consider a student taking graduate record examinations (GREs) measuring mathematical and verbal skills. He just took the math test and believes he did very poorly... If he decides that his poor score was caused by his lack of intelligence (internal, stable, global) or his exhausted condition (internal, unstable, global), or that the Educational Testing Service...gives unfair tests (external, stable, global) or that it is an unlucky day (external, unstable, global), when he confronts the verbal test in a few minutes, he will expect that here, as well, outcomes will be independent of his response, and the helplessness deficits will ensue. If the individual makes any of the four specific attributions for a low math score, helplessness deficits will not necessarily appear during the verbal test; i.e., lack of mathematical ability (internal, stable, specific) or being fed up with math problems (internal, unstable, specific) or that ETS asks unfair math questions (external, stable, specific) or being unlucky on that particular math test (external, unstable, specific) (pp. 57-58).

In view of the reformulated model, it is apparent that the amount of exposure to uncontrollability is not sufficient to determine whether helplessness deficits will persist over time and will generalize to a new situation.

Since the importance of the global-specific dimension was not recognized in time to be considered in the present study, no effort was made to control for this dimension in designing the experimental situation. In view of the fact that efforts were made to make each phase of the experiment appear distinctly different to subjects, it would likely have required rather global attributions for failure on the pretreatment task to have produced deficits on the later anagram task.

Depression effects. Two major findings emerged in the comparison of the performance of depressed and nondepressed subjects: failure to confirm previous findings of performance deficits in depressed control subjects relative to nondepressed control subjects, whereas, following exposure to a mastery experience the performance of depressed subjects was significantly poorer than that of nondepressed subjects.

Regarding the failure to find performance deficits in the depressed control subjects, it might be argued that the use of a nonclinical college population selected according to the criterion of scoring above the median for

college students on a paper and pencil measure of depression is inadequate to demonstrate performance deficits. Although, in his comprehensive review of performance deficits in depression, Miller (1975) concluded that there was little evidence of qualitative differences in the performance deficits shown by different subtypes of depression, including depression in normal populations, he did find that the degree of deficit was associated with depth of depression. One would, therefore, expect to find less of a deficit in depressed college students than in a clinically depressed population.

Nevertheless, as noted previously, several recent studies have reported significant differences between depressed and nondepressed subjects in normal college populations (Klein and Seligman, 1976; Klein, Fencil-Morse and Seligman, 1976; Miller and Seligman, 1975; Hale, 1976; Tennen, 1976; Litman-Adizes, 1978). Subject selection criteria appear to have been comparable in all of these studies. While several of the studies used the Beck Depression Inventory to measure depression, Hale and Tennen used the same measuring instrument (SDS) as the present study. Furthermore, in preliminary pilot data collected for this study, a correlation of .78 was obtained between the BDI and the SDS. In sum, it appears that the depressed subjects in the present study comprised a comparable population to

those in studies previously reporting depressive deficits.

The present author contends that, in fact, the results of the present study are not as discrepant with previous findings as appears to be the case at first glance. A careful analysis of the experimental designs of previously reported studies reveals that, in several of the studies (Hale, Tennen, Litman-Adizes), the reported differences between the depressed and nondepressed subjects occurred after outcome and/or attribution manipulations. The designs of these studies did not include the comparison of depressed and nondepressed control subjects.

Moreover, two other recent studies of performance deficits in depressed college students report a pattern of results similar to that of the present study. Kilpatrick-Tabak and Roth (1978) report no difference in the performance of depressed and nondepressed college students in control groups, whereas the performance of depressed students was inferior to that of nondepressed students following exposure to treatment. And, in a study by Miller, Seligman and Kurlander (1975), depressed college students performed more poorly on a discrimination learning task only when it was presented last in a series of tasks.

In sum, while the results of studies comparing performance deficits of depressed control college students has been mixed (Klein; Klein, Fencil-Morse and Seligman; and

Miller and Seligman report significant differences while the present study; Kilpatrick-Tabak and Roth; and Miller, Seligman and Kurlander do not), reliable differences have been found when performance is measured on a later task or following outcome and/or attribution manipulations (the present study; Hale; Tennen; Litman-Adizes; Kilpatrick-Tabak and Roth; Miller, Seligman and Kurlander).

A review of the literature on psychological deficit in depression reveals that a similar phenomenon has been noted in clinically depressed populations. Several studies (Payne, 1961; Friedman, 1964; Martin and Rees, 1966; Henry et al., 1973) have found that performance differences between depressed and nondepressed subjects emerged only on the later trials of a series of tasks. The performance of the depressed subjects is described as showing greater fluctuations and deteriorating more markedly over time than the performance of the nondepressed subjects.

Two different hypotheses have been advanced to account for the finding of depressive deficits on later tasks only. The first suggests that depressives may be more susceptible to fatigue, while the second postulates that depressives are less able to sustain motivation over time.

Miller (1975) has questioned the validity of the first explanation, however, noting that studies of pain and fatigue suggest that depressives, in fact, show higher

pain and fatigue thresholds than normals. He notes, on the other hand, that the methods used to measure pain and fatigue thresholds confound sensitivity to sensory stimuli with response bias and concludes that the results of these studies should therefore be interpreted with caution.

Kilpatrick-Tabak and Roth speculate about the processes that might underlie an inability on the part of the depressives to sustain motivation. They suggest that depressives may reinterpret success in a manner that interferes with subsequent performance, including intrusive worry about inability to sustain successful performance and greater susceptibility to feelings of discouragement on a difficult task. Although they do not identify these concepts as such, inability to sustain successful performance and susceptibility to feelings of discouragement clearly suggest an attributional interpretation for the depressive deficit following success.

According to the attribution model, fear of future failure and lack of persistence following a success experience would result from the attribution of success to unstable factors. In fact, this is exactly the pattern that emerged in the comparison of the depressed and non-depressed subjects in their attribution for success.

Following success at the therapy task, depressed subjects attributed the outcome to external and unstable

factors (particularly effort and luck) to a greater extent than the nondepressed subjects. Given this pattern, one would expect that depressed subjects would be less encouraged by a successful experience and would be more vulnerable to discouragement at encountering a difficult problem resulting in an increasing divergence in the amount of effort expended and in their consequent performance over the course of a series of tasks.

Studies examining differences between depressed and nondepressed subjects in expectancy of success lead to a parallel conclusion. Comparisons of initial expectancies have produced inconsistent findings. Some studies have found evidence of lower initial expectancies for success on the part of depressed subjects (for example, Loeb et al., 1967; Hale, 1976) while others have not (for example, Hammen and Krantz, 1976; Klein and Seligman, 1976; Miller and Seligman, 1973). When expectancies for future outcome are measured on later trials of a task or at the end of a series of tasks, however, researchers have consistently found that the expectancies of the depressed subjects are lower than those of the nondepressed subjects even when performance or feedback was identical (for example, Loeb et al., 1967; Hammen and Krantz, 1976). Thus, one can reasonably conclude that the performance deficits shown by depressives over a series of tasks results from an

attributional bias which dampens expectancies for outcome on future tasks.

A conceivable alternative explanation for the finding of performance deficits in depressed subjects who experienced treatment, given no deficits in depressed control subjects should be considered. Since subjects in the present study did not serve as their own controls, it is possible to argue that the control subjects differed in some way from the subjects who underwent treatment. Examination of all measures obtained during pretesting, however, mitigates against such an explanation.

The analysis of SDS scores, SAT scores and experience ratings revealed no differences among treatment groups. The analysis of I-E scores did reveal differences in nondepressed treatment groups, with subjects in the ND-IN-SO and ND-IN-AR groups having higher I-E scores than subjects in the ND-NN-O groups. This difference suggests, however, that at least with respect to I-E scores, nondepressed subjects in the two treatment groups were more like depressed subjects (more external) than were nondepressed subjects in the control group. Such a difference would be expected to have the effect of masking performance differences between nondepressed treatment and depressed treatment groups, rather than the difference that was actually observed.

The finding that depressed subjects were more likely

to attribute success to external factors lends support to the attributional model of depression suggested by Beck and confirms the findings reported by Tennen (1976). Two other recent studies of attributional bias in depression have similarly found that depressives are more external for success and they have also determined that depressives are more likely to attribute failure to themselves (Rizley, 1978; Litman-Adizes, 1978).

One would expect that the attribution of success to external factors would result in less pride in success. In fact, the depressed subjects did report feeling less effective than the nondepressed subjects following the therapy and anagram phases.

Sex differences. In addition to the differences related to level of depression which were discussed previously, the attribution data revealed significant differences as a function of sex. Specifically, females attributed success at the therapy phase to unstable factors to a greater extent than did the males.

While unanticipated, these results are, in retrospect, not surprising. Previous reports in the attribution literature have consistently found sex differences suggesting a bias toward self-enhancement in males and a bias toward self-depreciation in females. Studies have found that boys

have higher expectancies of success than girls, that girls but not boys attribute failure to poor ability more than success to good ability, and that girls are more likely to invoke luck explanations in general, while males show a defensive bias in luck attributions (Feather, 1969; Nicholls, 1975; Deaux and Farris, 1977; see Deaux, 1976, for a review of other studies of sex differences in attribution processes).

In the present study, the differences that were found in the attributional patterns of males and females paralleled the differences found between depressed and nondepressed subjects. Given the similarity in the attributional pattern of females (depressed and nondepressed) and depressed males, the pattern of performance differences on the anagrams appears at first glance to be paradoxical. Recall that females, whether depressed or not, performed worse on the anagram task when they had been instructed to view outcomes on the previous task as dependent of effort. The performance of the depressed females tended to be inferior to that of the nondepressed females, but the differences were not significant. The performance of the males, on the other hand, varied primarily as a function of level of depression, with the performance of the depressed males inferior to that of the nondepressed males. The males, particularly the depressed males, tended to respond better to the

attribution retraining, although the differences between treatment conditions were not significant.

In sum, although the attributional bias of the depressed males was similar to that of the females, their reactions to the two treatment conditions were very different. A possible explanation for this apparent paradox is suggested by a series of studies exploring reactions to unexpected success.

Aronson and Carlsmith (1962) noted that subjects who did not expect to succeed showed a deterioration in performance following feedback that their initial performance exceeded their expectations. They explained their findings in terms of cognitive consistency theory, arguing that people strive to maintain a consistent view of themselves and will avoid situations that are incongruent with their beliefs.

Later studies of this phenomenon produced equivocal findings (Ward and Sandvold, 1963; Silverman, 1964; Cottrell, 1965). Attempts to explain these inconsistent findings have been of two types: studies exploring aspects of the situation that would favor embracing versus rejecting success and studies examining personality traits which would separate those subjects likely to accept from those likely to reject success.

Mettee (1971) took the former approach by hypothesizing

that some success situations would prove more threatening than others to low self-esteem subjects. He suggested that psychological inconsistency was threatening, not merely because inconsistency is uncomfortable per se, but because inconsistency also raises the threat of exposure to future negative consequences. According to Metee, a person with low self-esteem fears raising false hopes, since s/he expects those hopes to be dashed by future failure.

Mettee separated these two dimensions of unexpected success by creating three separate experimental conditions. In one condition subjects were led to believe that they would receive further information about their abilities, thus maximizing both inconsistency and the threat of future failure; other subjects were assured that future tests would confirm their failure status, thus rendering success transient or "self-irrelevant" and minimizing both inconsistency and the threat of raising false hopes; a final group was assured that no further information would be provided, thus lessening the threat of raising false hopes but still arousing inconsistency with prior beliefs.

Mettee found that self-irrelevant success was accepted, inconsistent success was somewhat rejected, and success which was both inconsistent and raised the possibility of future failure led to the greatest deterioration of performance. These results confirmed the hypothesis that both

psychological consistency and expectation of future outcomes play a role in determining reactions to unexpected success.

Marecek and Mettee (1972) introduced the concept of chronicity or certainty of self-esteem to explain the finding of some studies that, following an unexpected success, some low self-esteem subjects will show improved performance while others will demonstrate subsequent deterioration of performance. Marecek and Mettee hypothesized that subjects whose low self-esteem is chronic have given up all hope of improvement and will respond to unexpected success by striving to reduce inconsistency and avoid future negative consequences. The person who is uncertain of his/her low self-esteem, on the other hand, is motivated to succeed, both because success is rewarding per se and because it provides a means for reducing uncertainty in a self-enhancing direction. Citing Mettee's findings, the authors further speculated that persons with chronic low self-esteem might accept success if it was rendered self-irrelevant. Relevance was manipulated by instructing subjects to view success as due to either luck (transient and self-irrelevant) or to ability (stable and self-relevant).

Results confirmed their reasoning. Following a self-produced success, subjects certain of their low self-esteem failed to show any improvement in subsequent performance whereas subjects uncertain of their low self-esteem improved

significantly. Following success that was attributed to luck, both groups improved, but especially the certain low self-esteem group.

Marecek and Mettee's findings suggest a possible model for understanding the pattern of results obtained in the present study. The evidence discussed above concerning sex differences in attributions and expectancies strongly indicates that females, whether depressed or nondepressed, suffer stable low self-esteem relative to males. While depressed males also evidence low self-esteem, the fact that nondepressed males possess high levels of confidence suggests that low self-esteem is a transient state for the depressed males. It is suggested that the low self-esteem expressed by depressed males is a temporary reaction to unfavorable life circumstances. Females, on the other hand, display a characterological bias toward self-depreciation. Implications of these sex differences in self-esteem are discussed below. Given this assumption, it would follow from Marecek and Mettee's findings that females would respond poorly to a self-produced success and well to a self-irrelevant success, while the converse would be true for depressed males.

In the present study the attribution retraining condition corresponds to Marecek and Mettee's "self-produced" success. The success only condition, on the other hand, was

"neutral" with regard to attribution for outcome and no clear attributional preference for success emerged in the success only condition.

Therefore, in order to clarify further the connection between attribution for success and subsequent performance, correlations of performance on the block design task and the anagrams with attributions for outcome during the therapy phase were computed separately for depressed males, depressed females, nondepressed males and nondepressed females. The correlations are presented in Table 90. The above reasoning suggests that the correlation of performance with internal factors (effort and/or ability) should be higher for depressed males than for depressed and nondepressed females. The correlation of performance with luck, on the other hand, should be higher for depressed and nondepressed females than for depressed males.

Differences between correlations of performance with attribution for depressed females and depressed males and for nondepressed females and depressed males was computed and are presented in Table 91. Results confirmed these post hoc predictions. For the depressed males, performance overall tended to correlate more strongly with effort ratings; for depressed females performance correlated most highly with luck ratings; for nondepressed females the strongest correlation was a negative relationship between effort

ratings and performance; while the correlations between attributions and performance were small and inconsistent for nondepressed males. The difference between correlations for depressed males and depressed females was significant for the correlation of block design performance with effort ratings (t = 2.15, df = 30, p < .05), for the correlation of postfailure anagrams with luck ratings (t = -2.53, df = 30, p < .05), and for the correlation of postfailure time with luck ratings (t = 2.88, df = 30, p < .01). The difference approached significance for the correlations of block design performance with ability ratings (t = 1.88, df = 30, p < .10), postfailure anagrams with effort ratings (t = 1.75, df = 30, p < .10), and postfailure time with effort ratings (t = -1.73, df = 30, p < .10). The difference between the correlations for depressed males and nondepressed females was significant for the correlations of block design performance with effort ratings (t = 3.33, df = 30, p < .01). The difference approached significance for the correlations of block design performance with ability ratings (t = 1.84, df = 30, p < .10) and for postfailure anagrams with effort ratings (t = 1.89, df = 30, p < .10).

In sum, these results indicate that the depressed males performed better on the therapy task and the subsequent anagram task when they attributed outcomes on the therapy task to internal factors, whereas the depressed and

nondepressed females performed better when they attributed outcomes to luck. These results support the hypothesis that females (depressed and nondepressed) respond poorly to a self-produced" success and respond well to a "self-irrelevant" success, while the converse is true for depressed males.

Implications

Success depressions. The relatively poor performance of the depressed females following a self-produced success can be viewed as presenting a laboratory analogue to the commonly observed phenomenon of "success depressions". To the outsider, seeing someone react to an apparent success, such as a promotion at work or the granting of a degree with depression rather than pride and pleasure appears "irrational". As the data presented above indicate, however, such a reaction follows logically from the attributional bias of persons with chronic low self-esteem.

Experientially, such a person reacts to self-produced success with internal verbalizations such as "I didn't deserve that and I know that I won't be able to keep it up in the future. I know I'm going to flop next time and then everyone will realize that I'm a fraud."

Reactions to failure. Marecek and Mettee (1972) speculate about the self-appraisal underlying uncertain low self-esteem.

They hypothesize that:

> being uncertain may indicate that the person doubts that his chronic negative behavior stems from intrinsic, immutable personal qualities. That is, he is uncertain as to whether his chronic self-assessment applies to what he actually is (i.e., underlying, finalized dispositional traits) or merely reflects the surface performance that has persisted for an extended period but does not arise from his basic nature (p. 104).

In the present study, it was demonstrated that depressed males attribute success in a manner similar to that of depressed and nondepressed females. Marecek and Mettee's speculations suggest the possibility, however, that the depressed males may differ from the depressed and nondepressed females in the stability of their attributions for failure. Tennen (1976) and Rizley (1978) both found that depressed subjects are more likely to attribute failure to effort and ability than nondepressed subjects. It is conceivable that the depressed males particularly emphasize lack of effort while the depressed females emphasize lack of ability following failure experiences.

One can speculate that such a difference in attribution for failure might have consequences for the depressed male's reaction to future failure. While the present study indicates that the depressed male benefits from self-produced success more than the depressed females, might we not speculate that, conversely, the depressed male would be more

vulnerable than the depressed female to self-produced failure. Since the depressed female is already convinced of her inadequacy, she might be less affected by failure attributed to ability than the depressed male who is still struggling to re-establish high self-esteem. Future research concerning differential reactions of depressed males and females to attributional manipulations for failure would help to clarify the processes underlying chronic versus uncertain low self-esteem.

Speculations about attributions for failure raise an interesting conceptual problem in the understanding of depression first suggested by Abramson and Sackheim (1977). These authors point out the difference between notions of responsibility and notions of causality. Causality implies an empirical dependence between an act and an outcome. Responsibility, on the other hand, depends upon the determination of whether or not an individual could have behaved differently in the situation. Abramson and Sackheim argue that:

> It is understandable that an individual who feels that a negative outcome results because of a personal deficit in lacking an appropriate response also feels ressonsible for that outcome... [However] it is illogical to attribute personal responsibility in situations in which the individual could not have done otherwise (p. 847).

First of all, it is necessary to clarify some semantic

confusion. Abramson and Sackheim seem to use the notion of responsibility to mean accountability or blame. In the above statement they appear to mean that while it is logical for an individual to assume responsibility or causality for a personal action which results in a negative outcome, it is illogical to feel guilty or accountable if the individual could not have done otherwise.

Recently, Weiner et al. (in press) have elaborated the attributional theory of affective consequences of causal ascriptions. They point out that all attributions affect emotional response and have delineated the most common specific attribution-affective links. They note that failure that is attributed to lack of ability is associated with feelings of inadequacy and incompetence, whereas failure attributed to lack of effort results in feelings of shame and guilt.

This distinction offers one possible resolution to the paradox posed by Abramson and Sackheim. Whereas depression has been shown to be associated with both guilt and feelings of inadequacy, it is conceivable that there are two groups of depressives: one of which predominantly attributes failure to personal deficits and expresses feelings of worthlessness and inferiority, while the other blames lack of effort for failure with consequent feelings of guilt and shame. The data of the present study would suggest

that persons with uncertain low self-esteem would be more likely to demonstrate a lack of effort-guilt syndrome, whereas persons with certain low self-esteem would evidence a lack of ability-inadequacy syndrome.

While conceptually plausible, however, clinical observations of depressives do not tend to support these speculations regarding two separate depressive syndromes. Beck (1967), for example, notes that 81% of depressed patients evidence low self-evaluation and 80% of depressed patients exhibit self-blame. Thus, it appears that feelings of inadequacy and feelings of self-blame co-exist, at least, in the experience of severely depressed patients. The question remains, then, as to whether the depressive holds incompatible and consequently "irrational" beliefs, or whether there is a logical explanation for the co-existence of these beliefs.

Recently, theorists have begun to note that the researchers' mapping of the attributional factors into the stable-unstable dimensions may in fact be artificial and distort the distinctions that occur in real life. The following are some examples of the attributions that subjects could conveivably make which would violate the usual mappings: "I'm a lazy person" (effort viewed as a stable characteristic), or "I have not yet mastered algebra" (ability viewed as an unstable characteristic). In their

exploration of the effects associated with various attributions for success and failure, Weiner et al. (in press) have, in fact, distinguished between stable effort and unstable effort. While they found that failure ascribed to either stable or unstable effort was linked with guilt and shame, unstable effort seemed, in addition, to be linked with fear (the authors speculate that this may be because the performer expects to be held accountable for his/her actions), whereas stable effort seemed, in addition, more closely related to feelings of hopelessness or depression.

One can further speculate that ability (or any other causal attribute) can be thought of as falling anywhere along a continuum from stable to unstable. One might think of bone structure, for example, as an innate, inborn characteristic. A person may hold the following belief: "I am too short to be a ballet dancer, I just don't have what it takes," with accompanying feelings of inadequacy or inferiority in comparison with long-limbed peers. Such a belief, however, is unlikely to be accompanied by feelings of guilt. One the other hand, one can conceive of ability as representing one's current level of skill[2] rather than an innate, inborn characteristic.

Current level of skill can also be thought of as being

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[2]A related concept was suggested in a different context by Marecek and Mettee.

more or less stable. At one extreme, a person may hold the belief that: "In order to be a great dancer, one has to begin practicing at an early age. I didn't begin early enough and now its too late. I will never be a great dancer and it's all my fault." Such a belief might well be accompanied by feelings of both inadequacy and self-blame.

One can speculate that depressives might be particularly prone to attribute failures to stable, but self-caused attributes. Thus, for example, the depressive might be particularly prone to view effort as a stable characteristic (e.g., "I'm a lazy person"), while ability is viewed as a stable current level of skill (e.g., "I will never be a great dancer because I let the opportunity pass me by."). Such beliefs would "logically" be accompanied by feelings of both inadequacy and self-blame. One can further speculate that chronicity of low self-esteem will be associated with a tendency to view failure as both unchangeable and self-caused while uncertainty of low self-esteem may be associated with the attribution of failure to changeable albeit self-caused factors.

At the other extreme might be a person who views current level of skill to be completely flexible. Such a person might hold the belief that: "I have what it takes to be a great dancer. All I have to do is practice hard

enough and I can be as good as anyone." Such a distortion is, in fact, suggestive of the grandiosity evidenced in mania. It is possible that mania reflects the obverse attributional distortions as those observed in depression. Whereas the depressive views success as transient and outside of personal control, while failure is viewed as both stable and self-caused, the manic may well view success as stable and self-produced, while failure is believed to be transient and subject to personal change.

While the present study examined distortions in the areas of locus of control and stability of attributions, it is likely that depression and mania evidence distortions along other dimensions as well. As mentioned previously, Abramson et al. have noted that attributions vary in terms of their specificity and have suggested that depressives are more likely to make global attributions for failure and specific attributions for success. Hammen and Krantz (1976) demonstrated that following failure, depressed females choose depressed-distorted cognitions to a greater extent than nondepressed females and the distortions seemed to be in the direction of being more global and stable. Manics may well show the obverse pattern, namely global attributions for success and specific ones for failure.

In a study of helplessness versus persistence, Dweck and Goetz (in press) suggest another aspect along which

attributions may vary, that is, in the timing of their occurrence. They have noted that helpless children are quick to make attributions for failure, to "diagnose," whereas mastery-oriented children respond to failure with self-instruction or "prescription." The authors further speculate as to whether there may be:

> ...those among the mastery-oriented who suffer from what may be termed the "Nixon syndrome"--unusually prolonged persistence designed to forestall the admission of failure (c.f. Brickman and Bulman, 1976)? For such children, as for helpless children, failure may have highly negative connotations for their competence; yet rather than surrender to it prematurely, they persist past the point of diminishing returns in the belief that, as expressed by Richard Nixon, 'You're never a failure until you give up.' (p. 31).

This description of the "Nixon syndrome" appears to the present author to be suggestive of the grandiosity of the manic patient.

In sum, it is suggested that further research into distortions of attributional processes offers considerable promise in clarifying the processes underlying depression-mania and uncertain-chronic low self-esteem.

Etiology. The data of the present study suggest that females have a characterological cognitive bias which predisposes them to respond to stressful life circumstances with self-blame and feelings of inadequacy. Given this finding, one would expect that epidemiologic studies of

depression should find that women are depressed more frequently than men. In fact, this is the case. In their review of epidemiologic studies of depression, Weissman and Klerman (1977) note that studies of patients in treatment as well as community surveys from several different countries consistently report that women preponderate in the rates of all diagnostic categories of depression.

While the grief reaction following a significant loss (such as the death of a loved one) shares many features in common with depression, it is not accompanied by distorted self-perceptions or self-accusation, and is generally considered to be a normal and adaptive reaction. Given the data of the present study, one would have no reason to expect to find any sex differences in the reports of grief reactions. In fact, Weissman and Klerman conclude that, contrary to the findings for depressive illness, there is no evidence of differences between men and women in frequency or types of depressive symptoms following bereavement.

Given the fact that women display a greater vulnerability to depression than men, two questions remain: what are the conditions necessary to produce a predisposition to depression; and, are females more likely than males to encounter these conditions?

Early parental interactions. Utilizing an object relations theory framework, Schwartz (1964) presents a view of depressive distortion very similar to that derived in the previous section from an attributional analysis of inadequacy and self-blame. Schwartz suggests that:

> The depressive person is quite able to conceive of himself as causing things, in himself or in other people. However, he does not see himself as having control or choice over what he causes, and he is frequently caught up in guilt over what he perceives as unwanted and unacceptable effects of his power (p. 696).

According to Schwartz, the infant develops a sense of personal accountability for actions before s/he has developed the sense of mastery or choice over his/her actions. Schwartz suggests that the kind of parent-child interactions which would produce a sense of power without mastery would be punitive or scolding interactions before the child has the capacity to recognize the verbal content of the scolding and/or before the infant is able to exercise control over his/her actions (e.g., punitive and premature toilet training on the part of the parents before the infant is capable of exercising bladder or bowel control).

The present author suggests that another, perhaps more common kind of parent-child interaction which would have a similar effect would be that of the parent who reacts to the child primarily as a function of the parent's internal state rather than as a function of the child's behavior.

For example, a parent who is frequently depressed or irritable and consequently critical toward the child may produce a sense of "badness" in the child without a concomitant sense on the child's part of the ability to control his/her "bad" behavior.

Schwartz hypothesizes that the development of a sense of power without mastery would form the basis for a vulnerability to depression. There is no reason to expect sex differences in the frequency of this type of parent-child interaction and consequently the initial seeds for the formation of depressive disorders should be equally prevalent in males and females.

Development of a sense of mastery. The opportunity to develop a sense of mastery and consequently the ability to maximize positive and minimize negative consequences is probably a key factor in preventing the development of depressive disorders. It is in this area, furthermore, that sex differences are likely to appear. Numerous writers have discussed differences in child-rearing patterns likely to favor the development of a sense of mastery in males. Radloff (in press) reviews the research in this area and concludes that women are seen by others and are socialized to view themselves as being passive, dependent, unsuccessful and in need of help and protection. Thus, it is suggested that males are more likely than females to

develop the sense of mastery necessary to overcome a feeling of destructive, uncontrollable power.

It should be noted, however, that the failure to develop a sense of mastery is not sufficient, by itself, to produce the distortions of self-blame evidenced in depression. Whereas passive, unassertive behavior may lead to feelings of dependency and neediness, it is the early development of a sense of destructive power coupled with the failure to develop a sense of mastery that lead to depression.

Studies of child-rearing patterns suggest that females should be more vulnerable to the development of feelings of helplessness and dependency as well as having a greater susceptibility to depression.

Attribution training. Dweck et al. (in press) provide an intriguing analysis of the contingencies of evaluative feedback in the classroom that are likely to engender the kind of bias toward self-denigration that females typically display in achievement situations. The authors note that in the early school years, girls are more highly regarded by teachers, receive higher grades and are given less negative feedback than boys. In spite of the more favorable treatment received by females, however, the way in which feedback is delivered results in less self-confidence and greater helplessness on the part of females.

By use of an observational study of teachers' feedback to boys and girls in the classroom, the authors found that:

> frequent and widespread use of negative evaluation for boys negates failure feedback from adults as an indicant of their ability. It makes it more likely that they will view negative feedback as either irrelevant to their performance or due to a lack of motivation. In this way they would learn to attribute academic failure to effort or to the evaluator's attitudes or criteria...the more sparing and discriminating use of negatives for girls makes negative evaluation particularly informative about the level of ability displayed (p. 4).

Real powerlessness. As Weissman and Klerman (1977) and Radloff (in press) note, the real social discrimination that exists against women leads to legal and economic dependency and narrows the number of possible avenues by which women could achieve a sense of mastery.

As pointed out previously, however, the distinction must be made between helplessness and depression. Powerlessness may well lead to helplessness, but it is powerlessness coupled with an exaggerated sense of responsibility and guilt which leads to depression.

Implications for treatment. The data of the present study and the speculations regarding reactions to failure and etiology suggest a number of rather straightforward implications for the treatment of depression.

Attribution retraining versus success only. The most obvious implication stems from the reactions of the depressed males and females to the two therapy procedures. The positive response of the depressed males to the effort reattribution for success suggests that, in persons for whom depression is a transient response to severe life stress, and where the depression does not reflect chronic, stable self-perceptions, encouragement to engage in mastery experiences will produce positive benefit.

This finding confirms the approach that clinicians have generally taken in working with clients who are in crisis (i.e., displaying an acute disruption of their usual functioning in response to a sudden change in life circumstances). Morley (1965) notes that one of the most important aspects of the treatment of the client in crisis is to encourage attempts at active coping in order to restore a sense of personal mastery. Treatment of persons who have been victimized (e.g., beaten, raped) generally utilizes a similar focus, that is, the therapist and significant others are cautioned to discourage dependency and to encourage the "victim" to take personal charge of as many aspects of the situation as possible (e.g., dealing with police and hospital personnel; making decisions regarding filing a complaint).

As the data from the present study indicate, however, encouraging active mastery in a person for whom depression

reflects a characterological attributional bias toward self-denigration may, in fact, be counterproductive. The present study, and the data presented by Marecek and Mettee, suggest that for persons with chronic low self-esteem, success that is chance-determined is more likely to be accepted (i.e., to result in further improvement in performance) than success that is self-produced.

At first glance this conclusion appears discouraging, however, in that it suggests that, while a person with chronic low self-esteem can be induced to perform successfully, s/he cannot be convinced to change his/her negative self-perception (i.e., a lucky success is accepted precisely because it is irrelevant to one's self-evaluation and consequently does not arouse consistency needs or fears of future failure). Marecek and Mettee offer an analysis of the consequences of lucky success, however, which suggests a more hopeful long-term prognosis. They note that:

> Even though a successful outcome is completely due to luck in an objective sense, a person may take partial credit for the success and therapy gently raises his self-esteem...the self-discretion aspect of a chance success would enable the low self-esteem person to claim a degree of personal responsibility for an esteem-enhancing event (i.e., success) that would fall short of arousing consistency concerns. A degree of self-attributed success that does not evoke consistency needs should be accepted by the low self-esteem person, and his self-esteem would rise accordingly (p. 105).

Thus, over a period of time, the person with chronic low self-esteem may be gradually drawn toward a more positive self-evaluation.

Reattribution for failure. Given that depressives tend to exaggerate personal responsibility for failure, it follows logically that depressives should benefit from attribution retraining designed to externalize responsibility for failure. As mentioned previously, the study by Klein et al. (1976) found just such an effect: depressed subjects given task difficulty attributions for failure performed better on a subsequent task than depressed control subjects, whereas the performance of nondepressed subjects was not affected by the attributional manipulation. And, as pointed out by Tennen (1976), in their comparison of performance deficits in depression and learned helplessness, Miller and Seligman (1975) noted as an interesting aside that, in contrast to nondepressed subjects, depressed subjects exposed to inescapable noise tend to show improved performance.

In his review of psychological deficit in depression, Miller (1975) notes that a number of studies have found that distraction by external stimuli improves the performance of depressed subjects while it has little effect on the performance of nondepressed subjects. The mechanism by which distraction improves the performance of depressives

has not been explored, although Miller notes that Foulds has hypothesized that distraction draws the depressive's attention away from intrusive internal concerns. The present author suggests that the distraction effect operates by providing an external attribution manipulation for failure. By so doing, it relieves the depressive of personal responsibility for potential failure, thereby freeing the depressive to try his/her best to succeed.

While the present study did not expose depressed subjects to failure experiences, nondepressed subjects were exposed to pretreatment with inescapable noise. Furthermore, the reader is reminded that outcome at the pretreatment task was seen by subjects to be primarily a function of luck and to bear little relationship to ability. Thus, the pretreatment can be viewed as an experience of attributing failure to external sources. Given the finding that the attributional pattern of the nondepressed female was similar to, albeit less extreme than that of the depressed female, it would follow that the nondepressed female should benefit from training that negative outcomes are not her fault. In order to test this post hoc prediction, the performance data for the comparison of subjects pretreated with escapable noise, inescapable noise or no noise was analyzed separately for males and females. The data is presented in Table 12 and the analyses of

covariance are presented in Tables 92 and 93. Results confirmed this prediction. Whereas the performance of the nondepressed males was not affected by the pretreatment experience, the females given pretreatment with inescapable noise solved more postfailure anagrams (F = 3.13, df = 2/20, $p < .07$) and took less time to solve postfailure anagrams (F = 3.52, df = 2/20, $p < .05$) than females not exposed to the pretreatment. In sum, nondepressed females, like depressed subjects, benefit from training that failure is due to external, impersonal causes.

Personal versus ideological control. The previous discussion indicates that, while women suffer societal discrimination which handicaps their chances of achieving, they tend to blame themselves. Weiner and Sierad (1975) and Lao (1970) have suggested that, for groups who are victimized by discrimination, it may be adaptive to encourage a distinction between personal control and reality-based obstacles and, consequently, to delimit the range of situations in which one attributes failure to oneself.

Prescription for failure. The observation of Dweck and Goetz (in press) mentioned previously that helpless children are quick to diagnose failure whereas persistent children focus on generating problem-solving strategies, suggests another avenue for approaching the treatment of depressive cognitions. The approach is analogous to

Ellis' (1962) suggestion that clients be trained to focus on what they are doing rather than how they are doing it.

A personal example of "prescription training" occurred during the writing of this dissertation. Trying to organize a number of ideas and a large body of literature habitually resulted in diagnoses of failure (e.g., "I can't do this, I don't know what I'm talking about") followed by avoidance behaviors. Confiding this difficulty in my advisor produced nonjudgmental prescription responses (e.g., "I find it helpful to make an outline and to break the material down into subtopics"). This "prescription training" had the effect of decreasing the frequency of depressive diagnoses of failure and increasing active coping.

In addition to affecting the frequency of depressive cognitions, prescription training may also have the effect of making attributions for failure more specific (e.g., "I need to make an outline" versus "I don't know what I'm talking about").

In sum, an attributional analysis of depression suggests a number of possible treatment approaches for the alleviation of depressive symptoms. Sex differences in self-esteem and in response to treatment suggests, in addition, that the clinician be alert to the distinction between depression that is a transient response to life-stress and depression that reflects characterological

distortions in attributions and that treatment be tailored accordingly.

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A P P E N D I C E S

A P P E N D I X A

INFORMATION SHEET

Name: _____

Sex: _____ Male _____ Female

Age: _____

Year in School: _____

Major: _____

SAT Scores: _____ Verbal _____ Quantitative

Rate your degree of experience in doing word games such as anagrams or scrabble:

1 2 3 4 5 6 7 8 9 10 11

No Experience At All

A Great Deal of Experience

APPENDIX B

I-E SCALE

Each question consists of 2 items. Read both of them and then choose the one that fits most closely how you feel, (circle the appropriate letter). There are no right or wrong answers--what is important is how you feel.

1a. Children get into trouble because their parents punish them too much.

b. The trouble with most children nowadays is that their parents are too easy with them.

2a. Many of the unhappy things in people's lives are partly due to bad luck.

b. People's misfortunes result from the mistakes they make.

3a. One of the major reasons why we have wars is because people don't take enough interest in politics.

b. There will always be wars, no matter how hard people try to prevent them.

4a. In the long run people get the respect they deserve in this world.

b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

5a. The idea that teachers are unfair to students is nonsense.

b. Most students don't realize the extent to which their grades are influenced by accidental happening.

6a. Without the right breaks one cannot be an effective leader.

b. Capable people who fail to become leaders have not taken advantage of their opportunities.

7a. No matter how hard you try some people just don't like you.

b. People who can't get others to like them don't understand how to get along with others.

8a. Heredity plays the major role in determining one's personality.

b. It is one's experiences in life which determine what they're like.

9a. I have often found that what is going to happen will happen.

b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.

b. Many times exam questions tend to be so unrelated to course work that studying is really useless.

11a. Becoming a success is a matter of hard word, luck has little or noting to do with it.

b. Getting a good job depends mainly on being in the right place at the right time.

12a. The average citizen can have an influence in government decisions.

b. This world is run by a few people in power, and there is nothing the little guy can do about it.

13a. When I make plans, I am almost certain that I can make them work.

b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.

14a. There are certain people who are just no good.

b. The is some good in everybody.

15a. In my case getting what I want has little or nothing to do with luck.

b. Many times we might just as well decide what to do by flipping a coin.

16a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.

b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

17a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.

b. By taking an active part in political and social affairs the people can control world events.

18a. Most people don't realize the extent to which their lives are controlled by accidental happenings.

b. There really is no such thing as "luck."

19a. One should always be willing to admit mistakes.

b. It is usually best to cover up one's mistakes.

20a. It is hard to know whether or not a person likes you.

b. How many friends you have depends upon how nice a person you are.

21a. In the long run the bad things that happen to us are balanced by the good ones.

b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

22a. With enough effort we can wipe out political corruption.

b. It is difficult for people to have much control over the things politicians do in office.

23a. Sometimes I can't understand how teachers arrive at the grades they give.

b. There is a direct connection between how hard I study and the grades I get.

24a. A good leader expects people to decide for themselves what they should do.

b. A good leader makes it clear to everybody what their jobs are.

25a. Many times I feel that I have little influence over the things that happen to me.

b. It is impossible for me to believe that chance or luck plays an important role in my life.

26a. People are lonely because they don't try to be friendly.

b. There's not much use in trying too hard to please people, if they like you they like you.

27a. There is too much emphasis on athletics in high school.

b. Team sports are an excellent way to build character.

28a. What happens to me is my own doing.

b. Sometimes I feel that I don't have enough control over the direction my life is taking.

29a. Most of the time I can't understand why politicians behave the way they do.

b. In the long run the people are responsible for bad government on a national as well as a local level.

A P P E N D I X C

ZUNG SELF-RATING DEPRESSION SCALE

Below are twenty statements. For each statement, determine whether that statement is true for you: (1) None of the time; (2) A little of the time; (3) Some of the time; (4) A good part of the time; or (5) Most of the time. Type the number corresponding to the response that is most true for you. Please do not skip any statements.

	None of the time	A little of the time	Some of the time	A good part of the time	Most of the time
1. I feel down-hearted and blue					
2. Morning is when I feel best					
3. I have crying spells or feel like it					
4. I have trouble sleeping at night					
5. I eat as much as I used to					
6. I still enjoy sex					
7. I notice that I am losing weight					
8. I have trouble with constipation					
9. My heart beats faster than usual					
10. I get tired for no reason					
11. My mind is as clear as it used to be					
12. I find it easy to do the things I used to do					
13. I am restless and can't keep still					
14. I feel hopeful about the future					
15. I am more irritable than usual					
16. I find it easy to make decisions					
17. I feel that I am useful and needed					
18. My life is pretty full					
19. I feel that others would be better off if I were dead					
20. I still enjoy the things I used to do					

A P P E N D I X D

MOOD SCALES

The following questions relate to moods or feelings which one could experience. For each of these questions indicate how you are feeling right now.

Indicate the extent to which you identify with the feeling described in each question by circling one of the numbers below the question. Please don't skip any questions.

1. How communicative are you feeling right now?

1	2	3	4	5	6	7	8	9	10	11
Extremely Communicative								Extremely Non Communicative		

2. How sad are you feeling right now?

1	2	3	4	5	6	7	8	9	10	11
Extremely Sad								Extremely Happy		

3. How serious are you feeling right now?

1	2	3	4	5	6	7	8	9	10	11
Extremely Frivolous									Extremely Serious	

4. How effective are you feeling right now?

1	2	3	4	5	6	7	8	9	10	11
Extremely Effective								Extremely Ineffective		

5. How angry are you feeling right now?

1	2	3	4	5	6	7	8	9	10	11
Not at all Angry									Extremely Angry	

A P P E N D I X E

ATTRIBUTION RATING SCALES

1a. How well did you do on this task?

1	2	3	4	5	6	7
Very Poorly						Very Well

b. Check here if this task is one in which level of performance is not being evaluated _____

2. To what extent is performance on this task due to level of ability?

1	2	3	4	5	6	7
Not at All						Very Much

3. To what extent is performance on this task due to level of difficulty of the task?

1	2	3	4	5	6	7
Not at All						Very Much

4. To what extent is performance on this task due to effort?

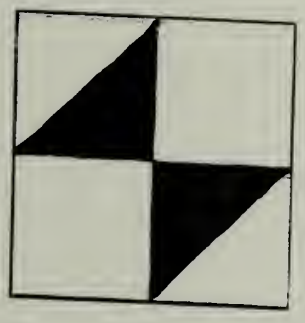
1	2	3	4	5	6	7
Not at All						Very Much

5. To what extent is performance on this task due to luck?

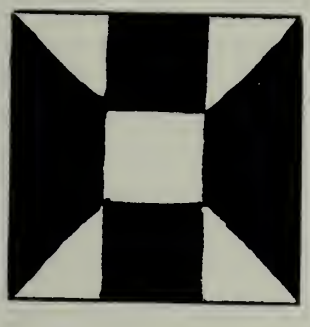
1	2	3	4	5	6	7
Not at All						Very Much

A P P E N D I X F

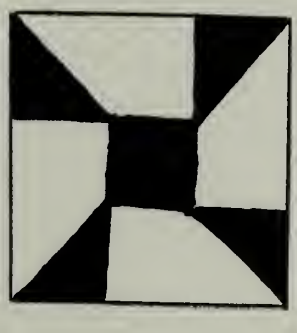
BLOCK DESIGNS USED IN THERAPY TASK



Sample



1



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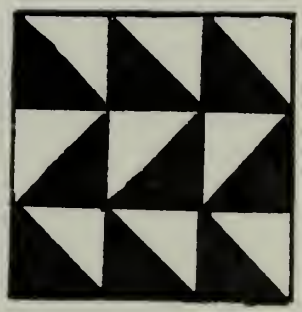

20

APPENDIX G

ANAGRAM TEST

Word Number	Scrambled Form	Word
1	U L T F A	F A U L T
2	I G T N A	G I A N T
3	C I H R A	C H A I R
4	I R T N A	T R A I N
5	P A T O I	P A T I O
6	M A N L E	-----
7	R P T A Y	P A R T Y
8	C I O T N	T O N I C
9	N R D K I	D R I N K
10	M H N U A	H U M A N
11	E K R L C	C L E R K
12	R B S C U	S C R U B
13	A O T L G	G L O A T
14	I U M C S	M U S I C
15	S E O N L	-----
16	G A W N O	W A G O N
17	O H T N M	M O N T H
18	L C O H T	C L O T H
19	H E C A B	B E A C H
20	I U F T R	F R U I T

A P P E N D I X H

PERCENTILE SCORES FOR COLLEGE STUDENTS*

RAW SCORE		PERCENTILE SCORE
1700		80
1675		85
1650		88
1625		91
1600	<----------	93
1575		95
1550		97
1525 or less		99

*Based on a sample of 378 UCLA undergraduates tested between September, 1973 and June, 1975.

A P P E N D I X I

SUBJECTS' REACTIONS TO EXPERIMENT QUESTIONNAIRE

DEPARTMENT OF PSYCHOLOGY

U.C.L.A.

NOTE: The Department of Psychology is interested in collecting information concerning the feelings of participants in experiments. In particular, we are interested in the issue of deception in psychological experimentation, a matter which has recently become of some concern and controversy among psychologists. The information you provide us will assist in making decisions regarding future standards for research.

We have randomly selected a number of studies being conducted in the department to administer the following questionnaire. We have done so without any knowledge of the content of the experiments. Thus, the experiment in which you have participated may or may not involve any deception.

It is important that your answers be honest. You need not include your name but you may if you so wish. Once you have completed the questionnaire please place it in the envelope provided and seal it. Thank you for your cooperation.

1. Do you believe that the experiment in which you have participated involved deception?

   Yes ( ) No ( )

   If your answer was <u>yes</u>, please proceed to question 2.

If your answer was no, please proceed to question 3.

2. a) Please explain the manner in which you believe you were deceived:

b) How convinced are you that there was deception in this experiment?

Very convinced ( ) Somewhat convinced ( )
A little suspicious ( )

c) How do you feel about having been deceived? (Assuming that you really were)

d) Do you feel that your behavior in the experiment was affected by the fact that you were suspicious?

e) Do you believe that the deception involved was necessary?

f) To what extent did you enjoy participating in this experiment?

Very much ( ) Somewhat ( ) Little ( ) Not at all ( )

Why?

g) How much scientific value do you think this experiment had?

Very much ( ) Quite a bit ( ) Some ( ) Little ( )
None ( )

h) Had you heard anything about the experiment prior to participating in it? If yes, what had you heard?

ADDITIONAL COMMENTS:

3. a) How convinced are you that there was no deception in this experiment?

Very convinced ( ) Somewhat convinced ( )
Not very sure ( )

b) Had you participated in other studies which did involve deception? If yes, what is your opinion of the use of deception in psychological experimentation?

c) Do you believe that deception would have added or distracted from the present experiment?

d) Do you believe your behavior in the experiment would have differed had you been deceived? If yes, how?

e) To what extent did you enjoy participating in this experiment?

Very much ( ) Somewhat ( ) Little ( )
Not at all ( )

Why?

f) Had you heard anything about the experiment prior to participating in it? If yest, what had you heard?

g) How much scientific value do you think this experiment had?

Very much ( ) Quite a bit ( ) Some ( )
Little ( ) None ( )

ADDITIONAL COMMENTS:

A P P E N D I X J

TABLES

Table 3

Definitions of Abbreviations

Abbreviation	Group
D-NN-SO	Depressed-No Noise-Success Only
D-NN-AR	Depressed-No Noise-Attribution Retraining
D-NN-O	Depressed-No Noise-No Treatment
ND-EN-O	Nondepressed-Escapable Noise-No Treatment
ND-IN-SO	Nondepressed-Inescapable Noise-Success Only
ND-IN-AR	Nondepressed-Inescapable Noise-Attribution Retraining
ND-IN-O	Nondepressed-Inescapable Noise-No Treatment
ND-NN-O	Nondepressed-No Noise-No Treatment

Table 4

Means and Standard Deviations for SDS Scores

Group	Male		Female	
	Mean	SD	Mean	SD
D-NN-SO	27.38	4.90	31.50	10.38
D-NN-AR	25.88	2.30	28.63	6.05
D-NN-O	24.75	2.96	27.75	4.89
ND-EN-O	15.38	3.74	16.00	3.89
ND-IN-SO	15.63	3.42	13.75	6.61
ND-IN-AR	16.13	3.87	14.50	4.90
ND-IN-O	16.00	2.98	17.88	2.23
ND-NN-O	15.00	4.50	12.63	5.63

*Higher scores reflect greater self-rated depression.

Table 5

Summary of Analysis of Variance on SDS Scores for Depressed and Nondepressed Groups

Source	df	F	p≤
Depressed			
Sex (A)	1	3.78	.06
Treatment (B)	2	1.24	.30
A x B	2	0.06	.94
Nondepressed			
Sex (A)	1	0.48	.49
Treatment (B)	4	1.15	.34
A x B	4	0.71	.59

Table 6

Means and Standard Deviations for IE Scores*

Group	Male		Female	
	Mean	SD	Mean	SD
D-NN-SO	8.38	4.87	13.75	2.96
D-NN-AR	10.38	4.24	12.88	3.09
D-NN-O	8.88	1.73	12.75	3.06
ND-EN-O	8.13	3.48	7.75	2.60
ND-IN-SO	9.63	3.46	9.00	5.93
ND-IN-AR	11.13	2.85	11.13	4.82
ND-IN-O	12.88	3.18	11.00	3.38
ND-NN-O	9.13	4.55	10.13	3.72

*Higher scores indicate greater externality.

Table 7

Summary of Analyses of Variance on IE Scores

Source	df	F	p≤
All subjects			
Sex (A)	1	6.56	.01
Depression (B)	1	2.91	.09
A x B	1	9.63	.002
Depressed subjects			
Sex (A)	1	15.26	.001
Treatment (B)	2	0.23	.80
A x B	2	0.69	.51
Nondepressed subjects			
Sex (A)	1	0.18	.67
Treatment (B)	4	2.58	.05
A x B	4	0.28	.89

Table 8

Means and Standard Deviations for SAT Scores

Group	Male			Female		
	N	Mean	SD	N	Mean	SD
D-NN-SO	7	1166	203	7	1164	77
D-NN-AR	7	1146	147	8	1002	65
D-NN-O	8	1206	139	6	1050	123
ND-EN-O	8	1060	244	7	1207	116
ND-IN-SO	7	1121	100	5	1274	104
ND-IN-AR	8	1209	134	3	993	269
ND-IN-O	4	1248	56	4	1030	97
ND-NN-O	7	1110	157	2	1133	108

Table 9

Summary of Analyses of Variance on SAT Scores

Source	df	F	p≤
All subjects			
Sex (A)	1	1.93	.17
Depression (B)	1	0.52	.47
A x B	1	3.03	.09
Depressed subjects			
Sex (A)	1	6.07	.02
Treatment (B)	2	1.73	.19
A x B	2	1.47	.24
Nondepressed subjects*			
Treatment	4	0.24	.91

*The uneven distribution of missing scores within this group made analyses by Sex and Sex x Treatment unfeasible.

Table 10

Means and Standard Deviations for Experience Ratings

Group	Male		Female	
	Mean	SD	Mean	SD
D-NN-SO	4.75	1.67	5.63	2.33
D-NN-AR	4.38	2.50	4.88	2.70
D-NN-O	4.00	1.07	6.00	2.20
ND-EN-O	4.50	2.56	4.75	2.38
ND-IN-SO	6.00	2.20	5.00	2.39
ND-IN-AR	5.00	2.45	4.25	1.91
ND-IN-O	4.25	2.76	6.38	1.92
ND-NN-O	4.13	2.23	4.25	2.12

Table 11

Summary of Analyses of Variance on Experience Ratings

Source	df	F	p≤
All subjects			
Sex (A)	1	2.45	.12
Depression (B)	1	0.05	.83
A x B	1	1.43	.23
Depressed subjects			
Sex (A)	1	3.29	.08
Treatment (B)	2	0.28	.75
A x B	2	0.53	.59
Nondepressed subjects			
Sex (A)	1	0.08	.77
Treatment (B)	4	0.88	.48
A x B	4	1.13	.35

Table 12

Means and Standard Deviations for Performance Measures: Pretreatment Effects

Group	Anagrams Solved		Total Time		Postfailure Correct		Postfailure Time	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
ND-EN-O Male	14.00	2.51	834	307	1.38	0.74	86.50	57.23
ND-EN-O Female	13.00	2.83	954	286	1.63	0.52	101.13	37.59
ND-IN-O Male	11.75	3.96	1011	336	1.50	0.76	80.25	64.49
ND-IN-O Female	14.75	1.67	743	221	1.75	0.71	47.50	60.88
ND-NN-O Male	12.50	3.85	998	263	1.38	0.52	86.13	49.61
ND-NN-O Female	12.38	3.42	973	286	1.25	0.89	90.13	73.73

Table 13

Summary of Analyses of Covariance for Performance Measures: Pretreatment Effects

Source	Dependent Measure: Anagrams Solved			Total Time			Postfailure Correct			Postfailure Time		
	df	F	p≤	df	F	p≤	df	F	p≤	df	F	p≤
Sex (A)	1	0.40	.53	1	0.35	.56	1	0.41	.53	1	0.03	.86
Pretreatment (B)	2	0.46	.69	2	0.54	.59	2	0.81	.45	2	1.00	.38
A x B	2	1.62	.21	2	1.63	.21	2	0.39	.70	2	0.57	.57

Table 14

Means and Standard Deviations for Communicativeness Ratings:*

Pretreatment Effects

Group		Rating 1 Mean	Rating 1 SD	Rating 2 Mean	Rating 2 SD	Rating 3 Mean	Rating 3 SD	Rating 4 Mean	Rating 4 SD
ND-EN-O	Male	5.38	2.83	5.13	2.36	6.25	2.71	6.00	1.69
	Female	4.00	2.20	5.75	2.38	5.38	2.56	5.75	2.43
ND-IN-O	Male	3.75	1.39	4.63	3.25	5.00	2.20	6.38	2.92
	Female	3.63	1.41	5.00	2.07	4.50	1.20	4.75	1.04
ND-NN-O	Male	6.00	2.67	6.13	3.23	5.63	2.77	5.38	1.85
	Female	4.13	1.36	5.38	3.50	5.25	1.75	5.13	2.75

*For mood ratings, Rating 1 = At Pretesting; Rating 2 = After Pretreatment; Rating 3 = After Therapy; and Rating 4 = After Anagram Test. Scores could range from 1-11 with 1 = extremely communicative and 11 = extremely noncommunicative.

Table 15

Means and Standard Deviations for Sadness Ratings:*

Pretreatment Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
ND-EN-O	Male	8.00	1.51	7.75	1.04	6.75	2.60	7.25	1.49
	Female	7.75	1.67	7.75	1.49	7.88	1.36	6.63	2.13
ND-IN-O	Male	7.13	2.53	7.38	2.00	7.50	2.07	6.75	2.05
	Female	8.00	1.85	7.63	1.92	8.38	1.30	7.88	1.55
ND-NN-O	Male	6.88	1.36	7.63	2.13	7.88	1.55	7.38	1.19
	Female	7.75	1.28	8.00	1.41	7.75	1.75	7.00	2.56

*Scores could range from 1-11 with 1=extremely sad and 11=extremely happy.

Table 16

Means and Standard Deviations for Seriousness Ratings:*

Pretreatment Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
ND-EN-O	Male	8.38	1.19	8.38	1.41	8.38	1.77	8.25	1.49
	Female	7.00	1.85	7.50	1.77	7.38	1.69	7.25	2.60
ND-IN-O	Male	8.75	1.98	7.38	1.92	6.38	2.72	7.13	2.90
	Female	7.75	1.83	7.38	1.69	6.38	1.41	7.00	1.20
ND-NN-O	Male	8.75	1.16	8.25	1.04	8.50	1.07	8.63	1.41
	Female	8.50	1.69	8.13	1.81	7.25	2.19	8.38	2.00

*Scores could range from 1-11 with 1=extremely frivolous and 11=extremely serious.

Table 17

Means and Standard Deviations for Effectiveness Ratings:*

Pretreatment Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
ND-EN-O	Male	3.88	2.10	6.25	3.45	6.75	2.49	5.63	2.26
	Female	7.13	1.46	6.13	2.47	6.50	2.45	7.13	1.81
ND-IN-O	Male	5.63	2.33	5.13	3.44	4.63	1.77	5.38	1.92
	Female	4.88	2.23	6.13	2.30	5.13	2.70	4.75	1.16
ND-NN-O	Male	5.63	2.50	5.63	2.72	5.50	2.51	7.00	2.39
	Female	6.50	2.33	6.75	2.49	6.38	3.07	5.75	2.55

*Scores could range from 1-11 with 1=extremely effective and 11=extremely ineffective.

Table 18

Means and Standard Deviations for Anger Ratings:*

Pretreatment Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD
ND-EN-O	Male	1.75	1.04	2.00	1.07	1.88	1.73	2.63	2.26
	Female	3.63	2.92	4.13	3.09	3.88	3.14	4.00	3.02
ND-IN-O	Male	2.50	3.12	3.63	3.46	2.75	2.76	3.50	3.07
	Female	2.13	2.23	3.88	2.80	1.75	1.04	2.00	1.20
ND-NN-O	Male	1.88	1.81	1.88	1.81	1.38	1.06	2.38	2.33
	Female	1.13	0.35	2.25	3.15	1.25	0.71	2.13	2.47

*Scores could range from 1-11 with 1=not at all angry and 11=extremely angry.

Table 19

Summary of Analysis of Variance on Communicativeness Ratings: Pretreatment Effects

Source	df	F	p≤
Sex (A)	1	1.16	.29
Pretreatment (B)	2	0.77	.47
A x B	2	0.04	.96
Phase (C)	3	3.94	.01
C x A	3	1.09	.36
C x B	6	0.85	.54
C x A x B	6	0.91	.49

Table 20

Summary of Analysis of Variance for Sadness Ratings: Pretreatment Effects

Source	df	F	p≤
Sex (A)	1	0.68	.42
Pretreatment (B)	2	0.02	.98
A x B	2	0.28	.76
Phase (C)	3	2.11	.10
C x A	3	0.56	.64
C x B	6	0.85	.54
C x A x B	6	1.06	.39

Table 21

Summary of Analysis of Variance for Seriousness Ratings: Pretreatment Effects

Source	df	F	p≤
Sex (A)	1	2.25	.14
Pretreatment (B)	2	2.18	.13
A x B	2	0.34	.71
Phase (C)	3	3.03	.03
C x A	3	0.43	.73
C x B	6	1.82	.10
C x A x B	6	0.42	.87

Table 22

Summary of Analysis of Variance for Effectiveness Ratings: Pretreatment Effects

Source	df	F	p<
Sex (A)	1	1.04	.32
Pretreatment (B)	2	1.61	.21
A x B	2	0.38	.68
Phase (C)	3	0.38	.77
C x A	3	0.86	.46
C x B	6	0.58	.74
C x A x B	6	2.01	.07

Table 23

Summary of Analysis of Variance for Anger Ratings: Pretreatment Effects

Source	df	F	p≤
Sex (A)	1	0.32	.58
Pretreatment (B)	2	1.56	.22
A x B	2	1.68	.20
Phase (C)	3	4.97	.003
C x A	3	1.34	.27
C x B	6	1.11	.36
C x A x B	6	0.41	.87

Table 24

Means and Standard Deviations for Ability Ratings:*

Pretreatment Effects

Group		Rating 1		Rating 2		Rating 3	
		Mean	SD	Mean	SD	Mean	SD
ND-EN-O	Male	3.00	1.69	2.13	1.73	6.13	0.83
	Female	2.88	1.81	2.50	1.41	6.13	1.13
ND-IN-O	Male	1.88	2.10	2.50	2.27	6.38	0.74
	Female	2.63	1.85	1.38	0.74	6.13	0.99
ND-NN-O	Male	3.13	2.95	2.13	1.36	4.63	2.00
	Female	2.75	1.49	2.13	1.55	5.50	1.07

*For attribution ratings, Rating 1 = After Pretreatment; Rating 2 = After Therapy; Rating 3 = After Anagram Test. For all attribution ratings scores could range from 1-7 with 1 = Not at all a factor and 7 = Very much a factor.

Table 25

Means and Standard Deviations for Task Ratings:

Pretreatment Effects

Group		Rating 1 Mean	Rating 1 SD	Rating 2 Mean	Rating 2 SD	Rating 3 Mean	Rating 3 SD
ND-EN-O	Male	5.25	1.83	2.00	1.41	6.00	0.76
	Female	2.50	2.14	2.63	1.69	5.13	1.64
ND-IN-O	Male	5.50	2.78	2.25	2.19	5.63	1.77
	Female	4.88	2.03	1.75	1.39	4.88	1.55
ND-NN-O	Male	2.00	1.77	2.38	1.77	5.25	1.75
	Female	3.75	2.55	3.25	2.55	5.50	1.20

Table 26

Means and Standard Deviations for Effort Ratings:

Pretreatment Effects

Group		Rating 1		Rating 2		Rating 3	
		Mean	SD	Mean	SD	Mean	SD
ND-EN-O	Male	3.88	2.10	4.13	2.17	5.88	0.99
	Female	3.50	2.14	4.38	2.20	5.00	1.77
ND-IN-O	Male	3.00	2.14	2.88	2.23	5.25	1.83
	Female	3.00	1.93	3.63	2.33	5.88	1.73
ND-NN-O	Male	2.13	1.46	3.13	2.10	4.88	2.03
	Female	3.50	2.07	3.00	1.77	5.38	1.19

Table 27

Means and Standard Deviations for Luck Ratings:

Pretreatment Effects

Group		Rating 1		Rating 2		Rating 3	
		Mean	SD	Mean	SD	Mean	SD
ND-EN-O	Male	5.25	1.91	2.25	2.19	2.13	1.46
	Female	5.38	1.41	2.63	1.60	3.13	1.81
ND-IN-O	Male	5.00	2.67	1.88	2.10	2.25	1.39
	Female	6.25	1.16	1.00	0.00	2.00	1.07
ND-NN-O	Male	1.00	0.00	1.50	1.41	2.75	1.49
	Female	2.13	2.23	1.13	0.35	1.88	1.36

Table 28

Summary of Analysis of Variance on Ability Ratings: Pretreatment Effects

Source	df	F	p≤
Sex (A)	1	0.002	.97
Pretreatment (B)	2	0.54	.59
A x B	2	0.11	.90
Phase (C)	2	96.59	.001
C x A	2	0.35	.71
C x B	4	1.96	.11
C x A x B	4	1.22	.31

Table 29

Summary of Analysis of Variance on Task Ratings:

Pretreatment Effects

Source	df	F	p≤
Sex (A)	1	0.34	.56
Pretreatment (B)	2	0.49	.62
A x B	2	2.50	.10
Phase (C)	2	40.22	.001
C x A	2	1.03	.36
C x B	4	4.05	.005
C x A x B	4	2.01	.10

Table 30

Summary of Analysis of Variance on Effort Ratings:

Pretreatment Effects

Source	df	F	p≤
Sex (A)	1	0.32	.57
Pretreatment (B)	2	1.25	.30
A x B	2	0.48	.62
Phase (C)	2	27.01	.001
C x A	2	0.09	.92
C x B	4	0.59	.67
C x A x B	4	0.79	.53

Table 31

Summary of Analysis of Variance on Luck Ratings: Pretreatment Effects

Source	df	F	p≤
Sex (A)	1	0.29	.59
Pretreatment (B)	2	11.61	.001
A x B	2	0.30	.74
Phase (C)	2	36.72	.001
C x A	2	2.00	.14
C x B	4	11.81	.001
C x A x B	4	1.37	.25

Table 32

Means and Standard Deviations for Performance Self-Rating: Pretreatment Effects

Group		Rating 1 Mean	Rating 1 SD	Rating 2 Mean	Rating 2 SD	Rating 3 Mean	Rating 3 SD
ND-EN-O	Male	4.75	2.38	4.88	2.30	4.13	0.99
	Female	4.50	2.33	3.63	2.33	3.88	1.36
ND-IN-O	Male	1.50	1.41	3.63	2.45	3.00	1.60
	Female	1.88	1.73	6.25	1.04	4.50	1.20
ND-NN-O	Male	4.63	3.07	4.50	2.98	3.25	2.25
	Female	5.88	1.13	6.00	0.93	3.25	1.98

Table 33

Means and Standard Deviations for Task Evaluativeness Ratings: Pretreatment Effects

Group		Rating 1		Rating 2		Rating 3	
		Mean	SD	Mean	SD	Mean	SD
ND-EN-O	Male	1.63	0.52	1.25	0.46	1.75	0.46
	Female	1.75	0.46	1.50	0.53	1.88	0.35
ND-IN-O	Male	1.88	0.35	1.38	0.52	1.88	0.35
	Female	1.63	0.52	1.38	0.52	2.00	0.0
ND-NN-O	Male	1.25	0.46	1.38	0.52	1.88	0.35
	Female	1.75	0.46	1.50	0.53	2.00	0.0

Table 34

Summary of Analysis of Variance for Performance Self-Rating: Pretreatment Effects

Source	df	F	p≤
Sex (A)	1	2.21	.14
Pretreatment (B)	2	2.69	.08
A x B	2	2.28	.11
Phase (C)	2	6.48	.002
C x A	2	0.39	.68
C x B	4	8.59	.001
C x A x B	4	1.41	.24

Table 35

Summary of Analysis of Variance on Task Evaluativeness Ratings: Pretreatment Effects

Source	df	F	p≤
Sex (A)	1	2.14	.15
Pretreatment (B)	2	0.24	.79
A x B	2	1.03	.37
Phase (C)	2	18.90	.001
C x A	2	0.00	1.00
C x B	4	0.98	.42
C x A x B	4	1.12	.36

Table 36

Means and Standard Deviations for Performance Measures: Depression Effects

Group		Anagrams Solved		Total Time		Posfailure Correct		Postfailure Time	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN-O	Male	12.63	3.96	974	320	1.13	0.83	122	51.56
	Female	12.00	3.77	987	386	1.38	0.74	91	56.86
ND-NN-O	Male	12.50	3.85	998	263	1.38	0.52	86	49.61
	Female	12.38	3.42	973	286	1.25	0.89	90	73.73

Table 37

Summary of Analyses of Covariance on Performance Measures: Depression Effects

Source	Dependent Measure: Anagrams Solved			Total Time			Postfailure Correct			Postfailure Time		
	df	F	p≤	df	F	p≤	df	F	p≤	df	F	p≤
Sex (A)	1	0.19	.66	1	0.02	.89	1	0.002	.97	1	0.27	.61
Level of Depression (B)	1	0.05	.82	1	0.01	.92	1	0.13	.72	1	0.84	.37
A x B	1	0.11	.74	1	0.11	.75	1	0.26	.61	1	0.51	.48

Table 38

Means and Standard Deviations for Communicativeness Ratings: Depression Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
D-NN-O	Male	5.00	1.69	5.00	1.31	5.25	2.05	5.63	2.39
	Female	5.38	2.62	5.25	2.60	6.38	2.72	5.63	2.13
ND-NN-O	Male	6.00	2.67	6.13	3.23	5.63	2.77	5.38	1.85
	Female	4.13	1.36	5.38	3.50	5.25	1.75	5.13	2.75

Table 39

Means and Standard Deviations for Sadness Ratings:

Depression Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
D-NN-O	Male	6.38	0.74	6.25	0.89	6.63	1.69	5.75	0.71
	Female	6.75	2.12	7.38	2.13	7.25	2.25	6.13	2.36
ND-NN-O	Male	6.88	1.36	7.63	2.13	7.88	1.55	7.38	1.19
	Female	7.75	1.28	8.00	1.41	7.75	1.75	7.00	2.56

Table 40

Means and Standard Deviations for Seriousness Ratings:

Depression Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
D-NN-O	Male	8.00	2.33	8.13	1.15	7.13	2.53	7.63	1.85
	Female	7.88	2.03	7.50	2.33	7.88	2.17	7.25	1.28
ND-NN-O	Male	8.75	1.16	8.25	1.04	8.50	1.07	8.63	1.41
	Female	8.50	1.69	8.13	1.81	7.25	2.19	8.38	2.00

Table 41

Means and Standard Deviations for Effectiveness Ratings: Depression Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
D-NN-O	Male	5.25	2.25	4.38	1.77	5.25	2.43	6.00	3.07
	Female	5.63	2.56	4.88	1.96	6.13	2.64	6.00	1.60
ND-NN-O	Male	5.63	2.50	5.63	2.72	5.50	2.51	7.00	2.39
	Female	6.50	2.33	6.75	2.49	6.38	3.07	5.75	2.55

Table 42

Means and Standard Deviations for Anger Ratings:

Depression Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
D-NN-O	Male	2.00	1.69	2.00	1.69	2.00	1.69	3.38	2.07
	Female	2.00	2.07	2.25	2.05	2.75	2.43	3.63	2.56
ND-NN-O	Male	1.88	1.81	1.88	1.81	1.38	1.06	2.38	2.33
	Female	1.13	0.35	2.25	3.15	1.25	0.71	2.13	2.47

Table 43

Summary of Analysis of Variance on Communicativeness Ratings:

Depression Effects

Source	df	F	p≤
Sex (A)	1	0.08	.78
Level of Depression (B)	1	0.01	.93
A x B	1	0.86	.36
Phase (C)	3	0.46	.71
C x A	3	0.58	.63
C x B	3	0.60	.61
C x A x B	3	0.48	.70

Table 44

Summary of Analysis of Variance on Sadness Ratings: Depression Effects

Source	df	F	p≤
Sex (A)	1	0.72	.40
Level of Depression (B)	1	4.10	.05
A x B	1	0.21	.65
Phase (C)	3	2.93	.04
C x A	3	0.61	.61
C x B	3	0.24	.87
C x A x B	3	0.50	.68

Table 45

Summary of Analysis of Variance on Seriousness Ratings: Depression Effects

Source	df	F	p≤
Sex (A)	1	0.29	.59
Level of Depression (B)	1	1.44	.24
A x B	1	0.13	.72
Phase (C)	3	1.25	.30
C x A	3	0.03	.99
C x B	3	0.56	.64
C x A x B	3	1.64	.19

Table 46

Summary of Analysis of Variance on Effectiveness Ratings: Depression Effects

Source	df	F	p≤
Sex (A)	1	0.40	.53
Level of Depression (B)	1	1.11	.30
A x B	1	0.001	.98
Phase (C)	3	0.99	.40
C x A	3	1.20	.31
C x B	3	0.85	.47
C x A x B	3	0.44	.72

Table 47

Summary of Analysis of Variance on Anger Ratings: Depression Effects

Source	df	F	p≤
Sex (A)	1	0.01	.91
Level of Depression (B)	1	1.78	.19
A x B	1	0.22	.65
Phase (C)	3	3.79	.01
C x A	3	0.39	.76
C x B	3	1.07	.37
C x A x B	3	0.18	.91

Table 48

Means and Standard Deviations for Ability Ratings:

Depression Effects

Group		Rating 1 Mean	Rating 1 S.D.	Rating 2 Mean	Rating 2 S.D.	Rating 3 Mean	Rating 3 S.D.
D-NN-O	Male	3.38	1.41	2.25	1.75	5.63	1.60
	Female	3.75	2.05	2.75	1.98	6.13	0.83
ND-NN-O	Male	3.13	2.95	2.13	1.36	4.63	2.00
	Female	2.75	1.49	2.13	1.55	5.50	1.07

Table 49

Means and Standard Deviations for Task Ratings:

Depression Effects

Group		Rating 1 Mean	Rating 1 S.D.	Rating 2 Mean	Rating 2 S.D.	Rating 3 Mean	Rating 3 S.D.
D-NN-O	Male	4.50	2.27	2.50	1.41	5.13	1.89
	Female	3.88	2.10	3.88	2.17	4.13	1.73
ND-NN-O	Male	2.00	1.77	2.38	1.77	5.25	1.75
	Female	3.75	2.55	3.25	2.55	5.50	1.20

Table 50

Means and Standard Deviations for Effort Ratings:

Depression Effects

Group		Rating 1 Mean	Rating 1 S.D.	Rating 2 Mean	Rating 2 S.D.	Rating 3 Mean	Rating 3 S.D.
D-NN-O	Male	5.00	1.51	3.75	1.98	5.75	1.49
	Female	5.63	1.85	3.63	2.45	4.25	1.83
ND-NN-O	Male	2.13	1.46	3.13	2.10	4.88	2.03
	Female	3.50	2.07	3.00	1.77	5.38	1.19

Table 51

Means and Standard Deviations for Luck Ratings:

Depression Effects

Group		Rating 1 Mean	Rating 1 S.D.	Rating 2 Mean	Rating 2 S.D.	Rating 3 Mean	Rating 3 S.D.
D-NN-O	Male	1.88	1.46	1.63	1.41	2.88	2.10
	Female	2.00	1.31	1.88	1.36	3.38	1.69
ND-NN-O	Male	1.00	0.00	1.50	1.41	2.75	1.49
	Female	2.13	2.23	1.13	0.35	1.88	1.36

Table 52

Means and Standard Deviations for Performance Self-Ratings:

Depression Effects

Group		Rating 1 Mean	Rating 1 S.D.	Rating 2 Mean	Rating 2 S.D.	Rating 3 Mean	Rating 3 S.D.
D-NN-O	Male	5.38	2.33	4.13	1.96	2.75	1.28
	Female	4.63	0.92	4.00	1.07	2.63	1.60
ND-NN-O	Male	4.63	3.07	4.50	2.98	3.25	2.25
	Female	5.88	1.13	6.00	0.93	3.25	1.98

Table 53

Means and Standard Deviations for Task Evaluativeness Ratings:

Depression Effects

Group		Rating 1 Mean	Rating 1 S.D.	Rating 2 Mean	Rating 2 S.D.	Rating 3 Mean	Rating 3 S.D.
D-NN-O	Male	2.00	0.00	1.50	0.53	2.00	0.00
	Female	1.63	0.52	1.50	0.53	1.88	0.35
ND-NN-O	Male	1.25	0.46	1.38	0.52	1.88	0.35
	Female	1.75	0.46	1.50	0.53	2.00	0.00

Table 54

Summary of Analysis of Variance on Ability Ratings: Depression Effects

Source	df	F	p≤
Sex (A)	1	0.58	.45
Level of Depression (B)	1	2.16	.15
A x B	1	0.13	.73
Phase (C)	2	32.75	.001
C x A	2	0.38	.69
C x B	2	0.15	.86
C x A x B	2	0.27	.76

Table 55

Summary of Analysis of Variance on Task Ratings: Depression Effects

Source	df	F	p≤
Sex (A)	1	0.79	.38
Level of Depression (B)	1	0.41	.53
A x B	1	1.13	.30
Phase (C)	2	11.73	.001
C x A	2	1.57	.22
C x B	2	2.91	.06
C x A x B	2	1.43	.25

Table 56

Summary of Analysis of Variance on Effort Ratings: Depression Effects

Source	df	F	p≤
Sex (A)	1	0.09	.76
Level of Depression (B)	1	5.93	.02
A x B	1	1.25	.27
Phase (C)	2	7.52	.001
C x A	2	1.59	.21
C x B	2	4.78	.01
C x A x B	2	0.67	.52

Table 57

Summary of Analysis of Variance on Luck Ratings: Depression Effects

Source	df	F	p≤
Sex (A)	1	0.10	.75
Level of Depression (B)	1	1.89	.18
A x B	1	0.18	.68
Phase (C)	2	9.19	.001
C x A	2	1.10	.34
C x B	2	0.32	.73
C x A x B	2	2.12	.13

Table 58

Summary of Analysis of Variance on Performance Self-Ratings:

Depression Effects

Source	df	F	p≤
Sex (A)	1	0.31	.58
Level of Depression (B)	1	1.61	.22
A x B	1	1.42	.24
Phase (C)	2	17.94	.001
C x A	2	0.49	.61
C x B	2	0.79	.46
C x A x B	2	0.86	.43

Table 59

Summary of Analysis of Variance on Task Evaluativeness Ratings: Depression Effects

Source	df	F	p≤
Sex (A)	1	0.15	.70
Level of Depression (B)	1	1.34	.26
A x B	1	3.72	.06
Phase (C)	2	14.96	.001
C x A	2	0.09	.72
C x B	2	1.84	.17
C x A x B	2	2.71	.08

Table 60

Correlations of SDS with Performance Measures: Depressed and Nondepressed Control Groups

Performance Measure	Correlation	p<
Anagrams Solved	-.05	.78
Total Time	.03	.86
Postfailure Correct	-.10	.59
Postfailure Time	.14	.44

Table 61

Correlations of SDS with Performance Measures: All Groups

Performance Measure	Correlation	p≤
Anagrams Solved	-.18	.04
Total Time	.18	.05
Postfailure Correct	-.13	.16
Postfailure Time	.16	.08

Table 62

Means and Standard Deviations for Block Design Scores

Group		Mean	S.D.
D-NN-SO	Males	16.25	4.13
	Females	16.88	3.72
D-NN-AR	Males	17.76	3.75
	Females	15.68	3.63
ND-IN-SO	Males	19.13	0.99
	Females	14.88	5.22
ND-IN-AR	Males	18.04	3.18
	Females	16.65	3.66

Table 63

Analysis of Variance on Block Design Scores

Source	df	F	p≤
Sex (A)	1	3.66	.06
Level of Depression (B)	1	0.33	.57
Therapy (C)	1	0.07	.79
A x B	1	1.27	.26
A x C	1	0.00	.97
B x C	1	0.01	.92
A x B x C	1	2.26	.14

Table 64

Means and Standard Deviations for Performance Measures:

Therapy Effects

Group		Anagrams Solved		Total Time		Posfailure Correct		Postfailure Time	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN-SO	Male	10.88	3.64	1080	275	1.13	0.64	111	47
	Female	14.50	3.07	809	249	1.75	0.46	76	50
D-NN-AR	Male	12.25	1.91	1056	223	1.38	0.52	89	43
	Female	11.25	4.46	1015	421	1.00	0.53	117	54
ND-IN-SO	Male	13.50	2.88	830	270	1.63	0.74	59	58
	Female	14.50	2.20	769	217	1.75	0.46	63	47
ND-IN-AR	Male	14.38	1.06	837	171	1.50	0.53	90	59
	Female	12.25	2.25	935	184	1.38	0.52	82	40

Table 65

Summary of Analyses of Covariance on Performance Measures:

Therapy Effects

Source	Anagrams Solved			Total Time			Postfailure Correct			Postfailure Time		
	df	F	p≤	df	F	p≤	df	F	p≤	df	F	p≤
Sex (A)	1	0.32	.58	1	1.33	.26	1	0.21	.65	1	0.06	.81
Depression (B)	1	3.90	.05	1	5.18	.03	1	3.08	.09	1	3.70	.06
Treatment (C)	1	0.77	.38	1	1.07	.30	1	2.75	.10	1	1.42	.24
A x B	1	1.06	.31	1	1.13	.29	1	0.11	.74	1	0.02	.90
A x C	1	7.44	.009	1	2.34	.13	1	4.92	.03	1	1.03	.32
B x C	1	0.05	.82	1	0.004	.95	1	0.005	.98	1	0.34	.56
A x B x C	1	0.22	.64	1	0.07	.79	1	1.72	.20	1	2.22	.14

Table 66

Means and Standard Deviations for Communicativeness Ratings: Therapy Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN-SO	Male	6.25	1.67	6.13	1.73	6.25	1.83	7.25	2.12
	Female	5.88	2.53	5.75	1.83	5.00	2.07	6.13	2.75
D-NN-AR	Male	5.88	1.89	6.63	1.77	6.38	2.50	6.25	1.04
	Female	6.13	1.55	5.88	1.36	6.50	2.14	7.88	2.53
ND-IN-SO	Male	4.75	2.12	6.75	2.25	5.00	2.67	6.00	2.88
	Female	3.38	1.60	6.25	2.60	3.75	1.58	5.13	2.36
ND-IN-AR	Male	4.50	1.60	4.88	1.73	4.13	1.64	5.38	1.92
	Female	3.75	2.38	6.38	3.02	4.25	1.98	6.38	2.97

Table 67

Means and Standard Deviations for Sadness Ratings:

Therapy Effects

Group		Rating 1 Mean	Rating 1 S.D.	Rating 2 Mean	Rating 2 S.D.	Rating 3 Mean	Rating 3 S.D.	Rating 4 Mean	Rating 4 S.D.
D-NN-SO	Male	5.88	0.99	6.00	1.41	6.50	1.07	5.75	1.58
	Female	6.00	1.60	6.25	1.58	6.38	2.39	5.75	2.19
D-NN-AR	Male	6.63	1.19	6.25	1.67	7.75	1.75	5.88	1.25
	Female	6.75	1.75	6.75	2.25	7.25	2.12	5.63	2.20
ND-IN-SO	Male	8.13	0.99	7.38	2.00	8.50	1.31	7.13	2.17
	Female	8.63	1.69	8.38	1.60	9.13	1.81	7.38	2.07
ND-IN-AR	Male	7.75	1.49	7.13	1.13	7.88	1.73	6.25	1.04
	Female	8.13	1.36	7.63	1.41	8.25	1.39	7.25	1.49

Table 68

Means and Standard Deviations for Seriousness Ratings:

Therapy Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN--SO	Male	8.38	0.72	8.38	1.41	8.00	1.77	8.50	1.77
	Female	7.63	2.00	6.50	2.07	6.25	2.38	7.00	1.85
D-NN-AR	Male	7.63	1.69	7.25	1.16	6.50	2.88	7.38	1.06
	Female	7.88	3.09	7.63	2.07	8.50	1.60	8.63	1.69
ND-IN-SO	Male	7.75	1.83	7.13	2.23	6.88	2.64	7.38	2.67
	Female	7.75	2.38	7.50	2.78	7.63	2.67	7.75	2.60
ND-IN-R	Male	6.75	3.37	6.50	3.63	7.88	2.42	8.25	1.16
	Female	7.50	1.07	7.50	1.60	6.88	1.81	7.25	1.98

Table 69

Means and Standard Deviations for Effectiveness Ratings:

Therapy Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN-SO	Male	5.25	1.28	6.25	1.58	4.75	2.12	7.63	1.41
	Female	5.75	2.12	5.75	2.60	5.50	2.83	6.63	2.97
D-NN-AR	Male	6.38	1.51	5.75	1.91	5.13	2.70	6.75	2.05
	Female	6.38	2.26	4.88	2.36	5.00	2.39	7.13	3.18
ND-IN-SO	Male	6.13	3.31	6.25	2.38	3.50	1.60	5.75	2.31
	Female	4.50	2.93	5.00	2.62	3.00	1.69	5.50	2.07
ND-IN-AR	Male	4.88	3.14	5.13	2.10	4.75	2.92	5.00	2.00
	Female	5.38	2.50	6.38	3.50	4.88	2.75	6.13	3.31

Table 70

Means and Standard Deviations for Anger Ratings:

Therapy Effects

Group		Rating 1		Rating 2		Rating 3		Rating 4	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN-SO	Male	4.00	1.93	2.38	1.69	2.75	2.19	5.00	2.51
	Female	3.75	2.60	3.38	2.33	3.75	2.71	4.13	2.30
D-NN-AR	Male	3.50	2.56	3.13	2.23	2.13	0.99	4.25	2.92
	Female	2.38	2.00	3.00	2.83	2.25	1.39	5.25	3.24
ND-NN-SO	Male	1.50	0.76	2.50	2.14	1.50	0.76	2.75	2.25
	Female	1.13	0.35	1.75	1.75	1.75	1.39	1.88	1.46
ND-NN-AR	Male	1.75	1.16	2.50	2.00	1.75	1.39	2.88	2.70
	Female	1.25	0.46	3.13	3.27	2.00	2.07	2.38	3.11

Table 71

Summary of Analysis of Variance on Communicativeness Ratings: Therapy Effects

Source	df	F	p≤
Sex (A)	1	0.36	.55
Level of Depression (B)	1	8.53	.005
Therapy (C)	1	0.05	.82
A x B	1	0.001	.97
A x C	1	2.36	.13
B x C	1	0.41	.53
A x B x C	1	0.05	.82
Phase (D)	3	10.65	.001
D x A	3	0.91	.44
D x B	3	4.95	.003
D x C	3	0.58	.63
D x A x B	3	1.21	.31
D x A x C	3	0.96	.41
D x B x C	3	0.73	.54
D x A x B x C	3	0.82	.49

Table 72

Summary of Analysis of Variance on Sadness Ratings: Therapy Effects

Source	df	F	p≤
Sex (A)	1	0.88	.35
Level of Depression (B)	1	21.52	.001
Therapy (C)	1	0.00	1.00
A x B	1	0.77	.38
A x C	1	0.01	.92
B x C	1	2.98	.09
A x B x C	1	0.002	.96
Phase (D)	3	12.76	.001
D x A	3	0.40	.76
D x B	3	0.74	.53
D x C	3	0.40	.75
D x A x B	3	0.17	.92
D x A x C	3	0.14	.94
D x B x C	3	0.80	.50
D x A x B x C	3	0.34	.80

Table 73

Summary of Analysis of Variance on Seriousness Ratings: Therapy Effects

Source	df	F	p≤
Sex (A)	1	0.01	.92
Level of Depression (B)	1	0.27	.61
Therapy (C)	1	0.005	.95
A x B	1	0.20	.66
A x C	1	1.22	.27
B x C	1	0.08	.78
A x B x C	1	2.53	.12
Phase (D)	3	1.86	.14
D x A	3	0.12	.95
D x B	3	0.27	.85
D x C	3	0.88	.45
D x A x B	3	1.29	.28
D x A x C	3	0.21	.89
D x B x C	3	0.04	.99
D x A x B x C	3	2.88	.04

Table 74

Summary of Analysis of Variance on Effectiveness Ratings: Therapy Effects

Source	df	F	p≤
Sex (A)	1	0.04	.84
Level of Depression (B)	1	3.08	.09
Therapy (C)	1	0.14	.71
A x B	1	0.001	.97
A x C	1	0.74	.39
B x C	1	0.17	.68
A x B x C	1	0.93	.34
Phase (D)	3	9.12	.001
D x A	3	0.17	.92
D x B	3	1.70	.17
D x C	3	0.95	.42
D x A x B	3	0.70	.55
D x A x C	3	0.45	.71
D x B x C	3	1.41	.24
D x A x B x C	3	0.47	.71

Table 75

Summary of Analysis of Variance on Anger Ratings: Therapy Effects

Source	df	F	p≤
Sex (A)	1	0.03	.87
Level of Depression (B)	1	10.93	.002
Therapy (C)	1	0.002	.96
A x B	1	0.15	.70
A x C	1	0.01	.93
B x C	1	0.80	.37
A x B x C	1	0.15	.70
Phase (D)	3	10.34	.001
D x A	3	1.47	.22
D x B	3	4.89	.003
D x C	3	1.38	.25
D x A x B	3	0.34	.80
D x A x C	3	1.05	.37
D x B x C	3	0.56	.64
D x A x B x C	3	1.25	.29

Table 76

Means and Standard Deviations for Ability Ratings:

Therapy Effects

Group		Rating 1		Rating 2		Rating 3	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN-SO	Male	4.13	2.03	6.13	1.36	5.75	1.04
	Female	2.75	1.39	5.75	1.16	5.63	1.19
D-NN-AR	Male	3.25	1.28	6.00	1.20	6.13	0.64
	Female	3.50	1.85	5.63	1.19	6.13	0.83
ND-IN-SO	Male	2.00	1.41	5.50	1.60	5.75	0.71
	Female	2.75	1.49	5.50	1.69	6.25	0.71
ND-IN-AR	Male	3.00	2.14	6.13	0.64	6.28	0.52
	Female	2.50	1.98	4.88	1.36	5.63	1.19

Table 77

Means and Standard Deviations for Task Ratings:

Therapy Effects

Group		Rating 1		Rating 2		Rating 3	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN-SO	Male	3.00	1.69	5.88	1.25	6.00	1.20
	Female	2.25	1.49	5.00	1.31	5.13	1.46
D-NN-AR	Male	3.38	1.51	4.88	1.55	5.88	0.99
	Female	3.38	2.13	5.88	0.83	5.38	1.41
ND-IN-SO	Male	2.75	1.83	4.38	1.85	5.25	0.71
	Female	3.50	2.45	4.75	1.49	5.38	1.51
ND-IN-AR	Male	3.50	2.73	5.00	1.85	5.50	1.20
	Female	3.63	2.62	4.63	0.92	5.13	1.25

Table 78

Means and Standard Deviations for Effort Ratings:

Therapy Effects

Group		Rating 1		Rating 2		Rating 3	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN-SO	Male	4.38	2.00	6.38	0.74	6.00	0.93
	Female	3.75	1.83	5.75	1.04	5.00	1.07
D-NN-AR	Male	3.75	1.39	6.50	0.76	5.63	1.41
	Female	4.13	1.81	6.75	0.46	6.25	0.71
ND-IN-SO	Male	2.63	2.07	5.25	1.16	5.00	2.00
	Female	4.50	2.51	6.13	1.13	6.25	0.71
ND-IN-AR	Male	2.50	2.27	5.50	1.51	5.25	1.98
	Female	4.38	2.67	6.63	0.52	5.75	1.04

Table 79

Means and Standard Deviations for Luck Ratings:

Therapy Effects

Group		Rating 1		Rating 2		Rating 3	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN-SO	Male	1.25	0.46	1.63	0.52	2.00	1.07
	Female	1.88	1.13	3.13	1.55	3.13	2.03
D-NN-AR	Male	2.38	2.26	2.13	1.55	2.25	1.28
	Female	2.63	2.20	2.13	1.25	2.25	1.49
ND-IN-SO	Male	3.88	2.53	1.38	0.52	2.50	1.41
	Female	4.75	1.49	1.75	0.46	2.13	0.99
ND-IN-AR	Male	4.50	2.39	1.75	0.71	2.13	0.83
	Female	5.13	1.96	2.13	1.25	2.13	1.55

Table 80

Means and Standard Deviations for Performance Self-Ratings:

Therapy Effects

Group		Rating 1		Rating 2		Rating 3	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN-SO	Male	4.75	2.38	5.50	1.60	2.50	0.93
	Female	4.75	1.16	5.25	1.58	3.50	1.41
D-NN-AR	Male	4.88	2.23	6.00	0.53	2.50	1.07
	Female	4.75	2.38	5.25	2.38	2.63	2.20
ND-IN-SO	Male	3.25	1.98	5.88	0.64	2.88	1.64
	Female	2.75	1.75	6.50	0.53	3.75	1.58
ND-IN-AR	Male	1.63	1.60	5.75	1.04	3.75	1.58
	Female	2.00	1.41	5.38	1.30	3.00	1.41

Table 81

Means and Standard Deviations for Task Evaluativeness Ratings:

Therapy Effects

Group		Rating 1		Rating 2		Rating 3	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
D-NN-SO	Male	1.38	0.52	2.00	0.0	1.88	0.35
	Female	1.50	0.53	1.88	0.35	1.75	0.46
D-NN-AR	Male	1.50	0.53	2.00	0.0	1.88	0.35
	Female	1.38	0.52	1.88	0.35	1.75	0.46
ND-IN-SO	Male	1.63	0.52	2.00	0	1.88	0.35
	Female	1.75	0.46	2.00	0	2.00	0
ND-IN-AR	Male	1.63	0.52	1.75	0.46	1.88	0.35
	Female	1.75	0.46	2.00	0	2.00	0

Table 82

Summary of Analysis of Variance on Ability Ratings: Therapy Effects

Source	df	F	p≤
Sex (A)	1	1.60	.21
Level of Depression (B)	1	3.07	.09
Therapy (C)	1	0.24	.63
A x B	1	0.09	.77
A x C	1	0.61	.44
B x C	1	0.01	.92
A x B x C	1	4.58	.04
Phase (D)	2	106.28	.001
D x A	2	0.43	.65
D x B	2	2.16	.12
D x C	2	0.21	.81
D x A x B	2	0.61	.55
D x A x C	2	0.50	.61
D x B x C	2	0.48	.62
D x A x B x C	2	0.50	.61

Table 83

Summary of Analysis of Variance on Task Ratings: Therapy Effects

Source	df	F	p≤
Sex (A)	1	0.16	.69
Level of Depression (B)	1	0.60	.44
Therapy (C)	1	0.72	.40
A x B	1	0.60	.44
A x C	1	0.11	.74
B x C	1	0.001	.97
A x B x C	1	2.06	.16
Phase (D)	2	45.49	.001
D x A	2	0.49	.61
D x B	2	2.19	.12
D x C	2	0.73	.48
D x A x B	2	0.39	.68
D x A x C	2	0.21	.81
D x B x C	2	0.19	.83
D x A x B x C	2	0.39	.68

Table 84

Summary of Analysis of Variance on Effort Ratings: Therapy Effects

Source	df	F	p≤
Sex (A)	1	4.20	.05
Level of Depression (B)	1	2.01	.16
Therapy (C)	1	0.40	.53
A x B	1	7.17	.01
A x C	1	0.89	.35
B x C	1	0.22	.64
A x B x C	1	1.59	.21
Phase (D)	2	53.13	.001
D x A	2	0.72	.49
D x B	2	0.31	.74
D x C	2	0.75	.47
D x A x B	2	0.55	.58
D x A x C	2	0.01	.99
D x B x C	2	0.17	.84
D x A x B x C	2	0.45	.64

Table 85

Summary of Analysis of Variance on Luck Ratings: Therapy Effects

Source	df	F	p≤
Sex (A)	1	3.02	.09
Level of Depression (B)	1	5.68	.02
Therapy (C)	1	0.47	.50
A x B	1	0.28	.60
A x C	1	0.86	.36
B x C	1	0.04	.84
A x B x C	1	1.02	.32
Phase (D)	2	16.47	.001
D a A	2	0.46	.63
D x B	2	24.99	.001
D x C	2	2.20	.12
D x A x B	2	0.65	.52
D x A x C	2	0.13	.88
D x B X C	2	0.64	.53
D x A x B x C	2	0.35	.70

Table 86

Summary of Analysis of Variance on Performance Self-Ratings: Therapy Effects

Source	df	F	p≤
Sex (A)	1	0.005	.95
Level of Depression (B)	1	2.41	.13
Therapy (C)	1	1.03	.32
A x B	1	0.005	.95
A x C	1	0.77	.38
B x C	1	0.77	.38
A x B x C	1	0.005	.95
Phase (D)	2	77.02	.001
D x A	2	0.68	.51
D x B	2	27.04	.001
D x C	2	0.47	.63
D x A x B	2	0.79	.46
D x A x C	2	1.73	.18
D x B x C	2	2.12	.13
D x A x B x C	2	0.56	.57

Table 87

Summary of Analysis of Variance on Task Evaluativeness Ratings: Therapy Effects

Source	df	F	p≤
Sex (A)	1	0.11	.75
Level of Depression (B)	1	3.85	.06
Therapy (C)	1	0.11	.75
A x B	1	2.67	.11
A x C	1	0.00	1.00
B x C	1	0.11	.75
A x B x C	1	0.43	.52
Phase (D)	2	21.70	.001
D x A	2	0.17	.84
D x B	2	2.10	.13
D x C	2	0.17	.84
D x A x B	2	0.17	.84
D x A x C	2	0.52	.59
D x B x C	2	0.17	.84
D x A x B x C	2	0.17	.84

Table 88

Distribution of Subjects Reporting Suspicion Regarding Experimental Manipulations

Group	Pretreatment Task		Percentile Feedback		Anagram Task	
	Male	Female	Male	Female	Male	Female
D-NN-SO	----	----	0	2	0	1
D-NN-AR	----	----	2	1	0	0
D-NN-O	----	----	----	----	2	1
ND-EN-O	----	----	----	----	1	2
ND-IN-SO	4	3	0	1	0	1
ND-IN-AR	2	1	0	0	2	0
ND-IN-O	4	0	----	----	2	0
ND-NN-O	----	----	----	----	1	0

Table 89

Intercorrelations among Pretest Measures and Anagram Performance Measures

	a	b	c	d	e	f	g	h	i	j	k	l
Experience Rating		.102	.093	-.060	.026	-.179[a]	-.068	.103	.187[a]	-.232[b]	.133	-.202[a]
I-E Scale			.224[a]	.047	.009	-.042	.095	-.020	.020	-.005	.081	-.072
SDS				.303[c]	-.366[c]	-.020	.131	.213[a]	-.181[a]	.177[a]	-.126	.158
Communicative					-.216[a]	.083	.362[c]	.151	-.226[a]	.245[b]	-.257[b]	-.287[b]
Sad						-.107	.078	-.500[c]	.095	-.096	-.112	.062
Serious							-.019	-.015	-.093	.033	.013	-.053
Effective								.029	-.167	.173	-.182[a]	.200[a]
Angry									.021	-.002	.147	-.068
Anagrams Solved										-.927[c]	.513[c]	-.479[c]
Total Time											-.499[c]	.552[c]
Postfailure Correct												-.851[c]
Postfailure Time												

[a] $p < .05$ [b] $p < .01$ [c] $p < .001$

Table 90

Correlations of Attribution Ratings with Performance Measures

Ratings	Group	Anagrams Solved	Total Time	Postfailure Correct	Postfailure Time	Block Design
Ability Ratings	Depressed Female	-.21	.26	-.01	.32	-.24
	Depressed Male	.27	-.16	-.02	.07	.46
	Nondepressed Female	.30	-.25	.11	.02	-.22
	Nondepressed Male	.07	-.04	-.37	.47	.40
Task Ratings	Depressed Female	-.06	.08	-.43	.45	-.28
	Depressed Male	.31	-.14	.20	.10	-.08
	Nondepressed Female	.09	-.09	-.13	.08	-.23
	Nondepressed Male	.18	-.15	.05	.11	-.02
Effort Ratings	Depressed Female	-.11	.14	-.29	.43	-.07
	Depressed Male	.33	-.11	.36	-.21	.65
	Nondepressed Female	-.16	.12	-.35	.25	-.48
	Nondepressed Male	.15	-.05	.45	-.27	-.44
Luck Ratings	Depressed Female	.43	-.50	.68	-.71	.35
	Depressed Male	.02	-.05	-.15	.22	.32
	Nondepressed Male	-.05	.09	-.20	.21	.34
	Nondepressed Female	.03	-.04	-.35	.45	.22

Table 91

T-Tests for Differences between Correlations of Performance with Attributions

Groups Compared	Performance Measures	Attributions			
		Ability	Task	Effort	Luck
Depressed Males with Depressed Females	Anagrams Solved	1.25	0.97	1.14	-1.12
	Total Time	-1.11	-0.55	-0.64	1.26
	Postfailure Correct	-0.03	1.70	1.75	-2.53[a]
	Postfailure Time	-0.69	-0.99	-1.73	2.88[b]
	Block Design	1.88	0.52	2.15[a]	-0.09
Depressed Males with Nondepressed Females	Anagrams Solved	-0.11	0.60	1.26	0.18
	Total Time	0.24	-0.12	-0.60	-0.36
	Postfailure Correct	-0.35	0.85	1.89	0.13
	Postfailure Time	0.12	0.06	-1.20	0.05
	Block Design	1.84	0.39	3.33[b]	-0.03

[a] $p < .05$

[b] $p < .01$

Table 92

Summary of Analyses of Covariance on Performance Measures for Females: Pretreatment Effects

Performance Measure	df	F	p≤
Anagrams Solved	2	0.98	.39
Total Time	2	1.00	.39
Postfailure Correct	2	3.13	.07
Postfailure Time	2	3.52	.05

Table 93

Summary of Analyses of Covariance on Performance Measures for Males: Pretreatment Effects

Performance Measure	df	F	p≤
Anagrams Solved	2	0.82	.45
Total Time	2	0.81	.46
Postfailure Correct	2	0.12	.89
Postfailure Time	2	0.07	.94