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SEX DIFFERENCES IN REACTANCE AND LEARNED HELPLESSNESS

Dale Susan Gody

Loyola University of Chicago

A Dissertation Submitted to the Faculty of the Graduate School of Loyola University of Chicago in Partial Fulfillment of the Requirement for the Degree of Doctor of Philosophy

February

1978

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VITA

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SEX DIFFERENCES IN REACTANCE AND LEARNED HELPLESSNESS

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The effects of small, large, and no amounts of experience with helplessness on measures of ability and persistence on an anagram problem solving task were studied in an attempt to seek experimental validation for the reactance-learned helplessness model of depression. Differences between males and females were examined as well as the effect of sex role identity as measured by Bem's Sex Role Inventory.

Eighty male and female college undergraduates were randomly assigned to one of four treatment groups, Single Helplessness (SH), Double Helplessness (DH), No Helplessness (NH), and Control (C). Subjects in the SH and DH conditions received either 5 or 10 insolvable anagrams out of a set of 15. The NH subjects received all solvable anagrams and C subjects received no pretraining. All subjects were tested on a set of 20 solvable anagrams in a set pattern. Attributions for success and failure as well as ratings of mood were gathered on all subjects.

Results indicated no significant differences between groups on mean ability and persistence scores. However, a positive association emerged between the amount of experience with helplessness and the number of trials to learn the anagram pattern. A trend for number of anagrams correct prior to learning the pattern also emerged. Sex of subject

had a significant effect upon mean response latency, a persistence measure. Females spent less time seeking solutions. A trend for number of anagrams correct before learning the pattern suggested that males learned the pattern in fewer trials. Correlations between sex and ability and persistence measures suggested that scores of persistence decreased more with helplessness experience for males, while for females, scores of ability were more adversely affected. Sex role identity was not related to measures of reactance and learned helplessness for males, but for females the more feminine identified they were, the longer they spent seeking anagram solutions and the fewer requests they made for new problems.

Data from questionnaires supported predictions made by the reactance-learned helplessness model. Experience with uncontrollable outcomes generally resulted in feelings of lack of control, incompetence, frustration, stress, and depression.

The results were discussed in terms of issues raised in the learned helplessness literature as well as by the combined reactance-learned helplessness model of depression. The importance of sex and sex role identity were examined as they relate to the ability to tolerate feelings of helplessness and to seek active solutions in situations where the outcomes are uncontrollable. Implications for future theory and research were discussed and suggestions were made for the treatment of depressions based upon the findings of this study.

INTRODUCTION

The study of depression has a long and rich history dating back to ancient Greece where Hippocrates and Galen first described melancholia as a slowness of thinking and action and an excess of black bile. Since that time there have been many advances in the study of depression including the development of classification schemes (Eysenck, 1970; Grinker, Miller, Sabshin, Nunn, and Nunnally, 1961; Kraepelin, 1927), studies of epidemiology (Kramer, 1965; Schwab, Bialow, Holzer, Brown, and Stevenson, 1967) and numerous studies of personality functioning in depressives such as cognitive functioning (Beck, 1967; Friedman, 1964), effects of success and failure (Loeb, Feshbach, Beck, and Wolf, 1964), and social skills (Lewinsohn, 1974). In addition, studies concerning the biological aspects of depression including genetics (Rosenthal, 1971) and the role of norepinephrine (Mandell, 1970; Schildkraut and Kety, 1967) have recently brought into question the purely psychological explanations of mood disorders.

Three prominent schools have emerged, all of which offer explanations about the etiology, symptoms, and behaviors associated with depression. It is beyond the scope of this paper to discuss in depth the differences both within and between the psychodynamic, cognitive, and behavioral theoretical positions. Instead, the purpose of

this review is to summarize the basic ideas and research findings of the three positions to achieve a synthesis of psychodynamic and cognitive theories as they relate specifically to the reactance-learned helplessness model of depression (Wortman and Brehm, 1975). More specifically, the purpose of this study is to seek experimental validation of the reactance-learned helplessness model of depression and to investigate the differences between males and females on solvable and insolvable cognitive tasks with respect to their ability and persistence.

Learned Helplessness

A particularly relevant and interesting behavioral model of depression known as learned helplessness has been proposed by Seligman (1972; 1974). Learned helplessness refers to the process whereby noncontingent reinforcement results in the perception that events are uncontrollable. The focus of much research on learned helplessness has been on inappropriate generalizations from an uncontrollable situation to one in which control is possible.

Seligman, Klein, and Miller (1976) propose that there are helpless depressions suffered by passive individuals with negative cognitive sets about the effects of their own actions. These people become depressed upon the loss of an important source of gratification, have a given prognosis, a preferred set of therapies, and perhaps a given physiology.

The authors list six characteristics of learned helplessness. These include, most importantly, learning impairment and passivity. Other characteristics are a time specific course in which helplessness seems to be limited to 48 hours after experience with noncontingent reinforcement, reduced aggression, loss of libido and appetite, and reduction in norepinephrine and septal activation. Since much research has been conducted on both animals and humans on the learning impairments and passivity associated with learned helplessness, and since they are the focus of the present study, a brief summary of the research supporting the other characteristics will be presented first followed by a more detailed account of research supporting negative cognitive sets and lowered response initiation.

In terms of the time limited course of learned helplessness, a series of experiments by Overmier and Seligman (1967) found that dogs given inescapable electric shocks in a harness did not show interference in learning to escape if 48 or more hours had elapsed between inescapable shock and testing in the shuttlebox. Likewise, Wallace (1957) suggested that in humans, experience with a disaster often results in a short term depression for a day, then functioning returns to normal. To date no laboratory studies have examined such a time course in the learning impairments and passivity of humans subjected to uncontrollable outcomes.

It may be that inescapable shocks produce a physiological depletion of whole brain norepinephrine which is restored in time (Seligman, et al., 1976). Recently investigators have argued that norepinephrine plays an important role in normal functioning and that its depletion may be a major cause of depression (Schildkraut et al., 1967).

Lack of expressed aggression in depressives has been demonstrated by Beck and Hurvich (1959) and Beck and Ward (1961) through an examination of dreams. They found that depressives tended to have more masochistic content in their dreams than nondepressives. These data would seem to fit nicely with the psychodynamic theories which in general postulate that angry feelings are introjected in order to preserve the good object.

Finally, loss of libido and appetite are frequent concomitants of depression in humans. Analogously, research by Maier, Anderson, and Lieberman (1972) demonstrated that helpless animals exhibit lower dominance in food getting and in sexual and social behaviors.

The first experiments to deal with the effects of uncontrollable outcomes on the subsequent learning that responses and reinforcements are independent were performed on dogs (Seligman, 1974). Dogs who experienced uncontrollable shocks demonstrated passivity and a failure to learn that by jumping over a barrier they could terminate a shock

in subsequent trials where shock was avoidable. Naive dogs who had not been subjected to helplessness training were quick to learn escape behavior. Seligman suggested that during exposure to inescapable shocks the dog makes responses and learns that shock termination is independent of its behavior. Thus, in similar situations the expectation that shock is uncontrollable leads to passivity and interferes with appropriate responding (Seligman, Maier, and Soloman, 1971).

Seligman and Maier (1967) demonstrated that it is lack of control over aversive stimulation and not the stimulation itself that produces helplessness. In addition, they found that dogs given experience with controllable shock before being subjected to uncontrollable outcomes (shock) did not manifest helpless behavior. These experiments suggest that learned helplessness might possibly be eliminated by forcibly demonstrating to a helpless animal that responses on its part can result in shock termination. Seligman, Maier, and Geer (1968) did just that and found success with retraining dogs to escape and avoid shock. More recently, Maier (1972) has found that experience with controllable shocks does not entirely erase helpless behavior in rats. Researchers (Maier, 1970; Overmier et al., 1967) have also demonstrated that dogs fail to escape in the shuttlebox following inescapable shock, not because

they have been adventitiously reinforced during the inescapable shock for a competing motor response, but because they have learned that their responses cannot control shock.

Glazer and Weiss (1976a) have suggested that Seligman's learned helplessness effects can be explained by the motor activation deficit hypothesis. In contrast to long term avoidance-escape deficits which are based on learning, they believe that the behavioral deficits reported in the learned helplessness literature are mediated by a temporary disturbance in central neurotransmitter activation which is produced by shock.

Weiss, Stone, and Harrell (1970); Weiss, Glazer, and Pohorecky (1974) have found that norepinephrine levels decrease in rats that are exposed to inescapable shocks, but increase in rats that are allowed to escape or avoid shocks. In several experiments the authors found that rats exposed to a cold swim, a condition known to deplete norepinephrine, exhibited learning deficits similar to those who received inescapable shocks. Rats exposed to a warm swim did not exhibit such a behavioral deficit. Other experiments showed that single sessions of helplessness training rather than repeated exposure to uncontrollable aversive situations resulted in larger behavioral deficits.

The authors also suggested that the duration of shock is important since longer shocks have produced more

interference with learning over time. These experimenters (Glazer and Weiss, 1976b) demonstrated that rats who received inescapable shock learned and performed an avoidance-escape task that required little movement better than no shock controls, but performed more poorly on one that demanded activity. These results support the hypothesis that long term interference effects result from learning lower activity levels.

Weiss (1971a) has also pointed to the importance of relevant feedback in coping behavior and stress pathology. He found that warning signals reduced ulceration in rats that both did and did not have control over shock. Subsequent experiments (Weiss, 1971b, 1971c) showed that animals which were punished each time they performed an escape-avoidance behavior developed more ulceration than yoked helpless animals. When animals were given a brief feedback signal after each avoidance-escape response, they showed only slightly more ulceration than non-shock controls and much less ulceration than either animals which could also avoid and escape shock, but had no feedback signal or yoked helpless animals.

In a recent article Maier and Seligman (1976) addressed the criticisms which Weiss and his associates have made about the learned helplessness hypothesis. As noted previously, Weiss suggested that performance deficits should still be present beyond 48 hours following inescapable

shock if animals have actually learned that responding and reinforcement are independent. Maier and Seligman, however, argue that both proactive and retroactive interference produce memory loss that increases with time since learning. They point to studies (Seligman and Beagley, 1975; Seligman and Groves, 1970) which found nontransient learned helplessness with rats and dogs up to seven days following experience with inescapable shock.

The authors also cite methodological differences as a possible explanation for the differences found between their results and those of Weiss. According to Maier and Seligman, Weiss found norepinephrine depletion after using twenty times the length of shock employed by Seligman and three times the strength. In addition, Weiss measured norepinephrine levels 30 minutes after shock, while Seligman waited 24 hours.

Another criticism Maier and Seligman directed toward Weiss involved the cold swim experiments. They suggested that cold swims are more aversive than warm swims and produce muscular debilitation. They also suggested that testing rats on a fixed ratio-1 shuttling task may be equivalent to testing animals on a task that is insensitive to learned helplessness effects.

Finally, the authors state that Weiss limited his criticisms of learned helplessness to experiments conducted with dogs, while he himself used rats.

While it is unclear at this point what role biochemistry does play in depression, it has proven to be an area of considerable import and much interest. And one can scarcely overlook the findings which those in support of the motor activation deficit hypothesis offer to challenge the learned helplessness model of depression.

Helplessness experiments with human subjects began in 1971 (Fosco and Geer, 1971). In this experiment subjects were given varying numbers of insolvable problems before receiving problems that were solvable. Subjects were shocked when the problems were insolvable, but not if they reached a correct solution when they were solvable. Results indicated that subjects who had more experience with no control made more errors. Since aversive stimulation was paired with lack of control in this study it was unclear which of the two was responsible for the behavioral deficit. Another early study (Thorton and Jacobs, 1972) found that subjects receiving inescapable shock during pretraining significantly increased their scores on the mental ability test from pretest to posttest, whereas the scores of subjects receiving avoidable shock or no shock during pretraining remained unchanged. The authors explained these findings as due to lack of similarity between training and testing tasks.

Hiroto (1974) used noise as an uncontrollable condition with human subjects. He found that subjects who had

been led to believe they would be able to control the noise, but in fact were not, performed significantly worse on the escape-avoidance task used in testing. They manifested longer response latencies and more failures to escape than subjects in the escape and no pretreatment groups.

A book by Glass and Singer (1972) which reported experiments designed to examine the effects of stress, adaptation to stress, and adverse aftereffects of stress, demonstrated that unpredictable stressors (noise in most cases) produced more deleterious aftereffects in performance than predictable ones. In addition, studies showed that subjects who had access to an escape button and perceived themselves as in control over aversive stimulation, demonstrated fewer poststress performance decrements than did subjects without a button. They rated themselves as less helpless, incompetent, and weak than subjects in the condition of no perceived control.

Several other studies with humans have sought to examine whether helplessness is restricted to tasks similar to the training task or whether performance would also be impaired on tasks different from that in the training situation. Hiroto and Seligman (1975) used either instrumental pretraining which involved button pressing to avoid aversive noise, or cognitive pretraining, which involved solving concept formation problems. Both types of tasks were used to measure generalization of learned helplessness.

Thus, subjects given instrumental pretraining were tested on cognitive tasks and vice versa, as well as two other conditions of same pretraining and testing modality. In all of the conditions except the cognitive pretraining-cognitive testing, subjects who received inescapable or insolvable pretraining performed significantly worse on number of trials to escape, number of failures to escape, and mean latency of responding, than subjects who received escapable or solvable pretraining. The authors suggest their data supports the hypothesis that learned helplessness does generalize across different situations.

Another study (Roth and Bootzin, 1974) attempting to demonstrate learned helplessness effects found that subjects who were exposed to helplessness training in one concept formation experiment exhibited more controlling behavior in the testing phase which was presented as a second concept formation experiment than subjects who did not receive helplessness training. Controlling behavior was described as seeking out the experimenter to correct television malfunction. While it could be argued that this is a more assertive behavior than trying to correct the malfunction of the set one's self, it seems equally likely that this was a helpless behavior. Responses to questionnaires revealed that subjects in the "helpless" groups felt more in control of their success and failure than subjects in control groups. A significant correlation between

feelings of failure and frustration in the training phase and feelings of control in the test phase emerged. There were no differences in problem solving ability between groups.

Learned helplessness studies have also sought to demonstrate the comparability between performance deficits generated through the induction of helplessness in nondepressed subjects with those of depressed subjects (Klein and Seligman, 1975; Miller and Seligman, 1975). Nondepressed students exposed to uncontrollable events in the form of inescapable noise or unsolvable concept formation problems showed subsequent performance deficits when compared to nondepressed subjects exposed to controllable events or no events. These deficits were comparable to those in people with naturally occurring depressions who had not undergone helplessness training. Interestingly enough when the effect of the sex of the subject was examined, females performed better than males. However, there was no significant interaction between sex of subject and amount of helplessness training. The authors attributed the sex differences to the greater verbal ability of females.

Several other studies have paid attention to how the depressive views reinforcement. In a task involving skill, Miller and Seligman (1973) found that depressed subjects perceived reinforcement as more response independent than

nondepressed subjects. The more depressed the subjects were, the more they saw reinforcement as independent of response. These results were duplicated both with nondepressed individuals who were subjected to inescapable noise during skill tasks and with depressed subjects receiving no noise (Klein et al., 1975; Miller et al., 1975). More response-reinforcement independence was perceived by nondepressed subjects in the inescapable noise condition than in the escapable and no noise conditions.

Experiments employing measures to assess the degree to which subjects are able to benefit from successful test-task responding showed depressed subjects to be cognitively impaired relative to controls (Klein et al., 1975; Miller et al., 1975). Nondepressed subjects receiving uncontrollable events exhibited deficits similar to those of depressed subjects.

Quite a number of studies have been presented, but what do they, as a body of research have to say in support of the learned helplessness model? Generally they have demonstrated that it is possible to experimentally induce performance deficits comparable to those observed in naturally occurring depressions. They have not, however, consistently demonstrated that experience with uncontrollable outcomes results in passivity (Roth et al., 1974; Thorton et al., 1972). Another limitation of the studies reviewed is that in some cases subjects received aversive

consequences as the result of missing problems, while in others, experience with insolvable problems alone was expected to result in helplessness. Thus, methodological problems confuse the antecedents of helplessness.

Reactance Theory and Learned Helplessness

Wortman and Brehm (1975) have suggested that a better understanding of depression might be reached through an integration of learned helplessness with reactance theory. Reactance theory (Brehm, 1966) suggests that when a person's behavioral freedom is threatened he or she will become motivationally aroused. This arousal, called reactance, leads individuals to try to restore their freedom.

Research has demonstrated that a person will experience psychological reactance when behavioral choices are eliminated or control over behaviors is threatened, only if he/she held the expectation of freedom to engage in the given behavior (Hammock and Brehm, 1966). Reactance theory also predicts that if an individual's freedom is eliminated, he/she will experience more reactance then if his/her freedom is only threatened or if no threat is made. The more important the freedom in question is to the individual, the more reactance the person will experience when the freedom is threatened or taken away (Brehm and Cole, 1966). If a person believes that the threat has implications for the future, he/she will manifest more reactance (Brehm and Sensenig, 1966).

Reactance theory makes several predictions about the behavior of people subjected to uncontrollable outcomes. First, it predicts that attractiveness of an uncontrollable outcome decreases if a person is forced to endure an option that he/she would rather avoid. Concomitantly, the attractiveness of the denied behavior increases. Experimental evidence supports this (Worchel and Arnold, 1973). Second, direct attempts to engage in the threatened or eliminated behavior will increase. Third, an attempt may be made to restore behavioral freedom by engaging in an activity which suggests by implication that the individual could engage in the threatened behavior. Finally, hostility and aggression are believed to be products of the restriction of behavioral freedom.

Thus, reactance theory in contrast to the learned helplessness model predicts that individuals will react to loss of control by becoming hostile and aggressive towards those restricting their freedom, while learned helplessness suggests individuals will react with passivity. Reactance theory also suggests changes in the evaluation of outcomes which are uncontrollable, while the learned helplessness model makes no such predictions. The theories also differ in their predictions of the results of repeated exposure to uncontrollable outcomes. Reactance theory predicts that individuals will attempt to restore their freedom by engaging in activities that imply they have freedom in the area

which has been threatened, while learned helplessness theory suggests that repeated exposure to uncontrollable outcomes results in learning that responses and reinforcements are independent.

Wortman et al., (1975) suggest that if an individual expects to have control over an outcome, moderate amounts of experience with helplessness (that is, the impossibility of influencing the outcome) will result in psychological reactance or increased attempts to maintain control. The more important the outcome, the more reactance should be experienced. As a person continues to experience that his/her behavior cannot influence the outcome, helplessness results. The more important the outcome, the greater the amount of helplessness that will be experienced. This integrative model suggests that individuals who do not expect control will not demonstrate reactance regardless of the importance of the outcome.

Support for the integrative model has come from both animal and human studies. Dogs that had been given experience with escapable shocks prior to helplessness training, and thus by implication greater expectation of control, made more escape responses during inescapable shock sessions than dogs with no prior experience with control (Seligman et al., 1967). Seligman et al., (1970) found that dogs reared in cages manifested more helplessness than mongrels subjected to equal amounts of helplessness training. They

reasoned that mongrels had more prior experience with control than cage reared dogs.

An experiment reported by Glass et al., (1973) hypothesized that subjects subjected to a frustrating bureaucratic experience over which they had no expectation of control would become passive and compliant. In contrast, given a similar experience in which the individuals expected to have control through interaction and persuasion of the experimenter, the authors hypothesized that subjects would become hostile and negativistic. The results provided support of the authors' hypotheses and of the integrative model. However, Wortman and Brehm point out that it is difficult to establish whether or not expectations for control were being manipulated or if, in fact, attributions of blame for the unpleasant experience was the variable of importance.

A fascinating experiment by Roth and Kubal (1975) examined the interaction of the importance of outcomes with the amount of helplessness training in college students, using concept formation problems. Students were led to believe the experiment was a simple cognitive task (Low Importance) or a predictor of success in college (High Importance). They were also assigned to conditions of contingent reinforcement (Control) and varying amounts of noncontingent reinforcement (Single or Double Helplessness Training). The results revealed that subjects in the High Importance condition who received low amounts of helplessness

training solved significantly more problems and were more persistent than subjects receiving no training. In contrast High Importance subjects receiving large amounts of helplessness training performed more poorly than the No Training group.

The interaction between amount of helplessness training and the importance of the outcome failed to reach significance. However, according to their own reports, High Importance subjects receiving Double Helplessness training felt more helpless than Single Helplessness and Control subjects. In addition, High Importance subjects in the low helplessness training condition reported feeling more motivated in the test task than did the No Training Control subjects.

These results support the reactance-learned helplessness model of depression. They highlight the need for considering the importance of the outcome, the expectations for control, and the amount of experience with helplessness as separate variables influencing how individuals will react when confronted with uncontrollable outcomes. In addition, Wortman et al., (1975) suggest that researchers need to examine how attributions of causality for lack of control influence reactance and helplessness. They propose that learned helplessness may be more likely if a person attributes his/her failure to exert control to stable and

unchangeable factors such as innate ability or characteristics of a task, rather than changeable or variable ones like insufficient effort or bad luck.

Other Behavioral Theories

Within the behavioral orientation there are a number of differing explanations about the etiology of depression. One school of behaviorists proposes that depression is a function of inadequate reinforcement or reduced reinforcement (Lazarus, 1968). Reinforcers refer to money, position, love, health, etc. The proposal, then, is that some significant reinforcer has been withdrawn from the individual and has not been replaced by a substitute resulting in depression.

Lewinsohn and Graf (1973) more specifically label reduced frequency of social reinforcement as the cause of depression. According to this model, depressive behavior is maintained initially by the attention and concern aroused in others. Subsequently, people avoid the depressive as much as possible, thus decreasing the rate of positive reinforcement received and maintaining the depression. Low social skill on the part of the depressive is believed to underlie low rates of response contingent positive reinforcement.

Ferster (1973) proposed that loss of reinforcible behavior is the common denominator of depressed people. He

outlined two broad classes of circumstances that can give rise to loss of reinforcible behavior in man: 1) aversively motivated behaviors becoming prepotent and displacing reinforcible behaviors, and 2) direct reduction of reinforcible behavior. Ferster's suggestion is that when a behavior pattern like walking is common to a number of other behavior patterns such as shopping, sports, visiting friends, etc., losing the ability to walk would render these activities much less probable, and according to Costello (1972) a loss of reinforcer effectiveness would occur.

Moss and Boren (1972) believe aversive control is associated with depressive behavior, either directly where the aversive event is a reduction of positive reinforcement, or indirectly where punishment, avoidance, and escape may suppress behaviors that would have been followed by positive reinforcement.

Finally, social learning theorists (Rotter, Chance, and Phares, 1972) believe that depression may arise in three conditions: 1) when an individual's freedom of movement in an important need area is low, 2) if there is an element of permanency in the situation, and 3) if the individual expects he can never reach the desired minimal level of achievement in an important need area.

In summary, the behaviorists view depression as a learned behavior which results either from inadequate or reduced positive reinforcement or from an aversive event.

Thus, any environmental change, that is the loss of a discriminative stimulus for behavior, may be an antecedent for depression (Eastman, 1976).

Cognitive Perspectives

The cognitive approach to depression is one which has been discussed chiefly by Beck (1967; 1970). Beck regards most depressions, that is reactive depressions, as primary thought disorders in which a negative view of the self, the world, and the future predominates. These cognitive disturbances evolve from early loss, deprivation, or peer rejection. As a result of these early experiences, depressives react to subsequent experiences as though they were still helpless and hopeless. Prevalent in Beck's view of the cognitive distortions of the depressive are negative evaluations of the self which stem from perceived appraisals by significant others, often parents, which are internalized.

Beck labeled five types of cognitive distortions which are experienced involuntarily in the face of experiences reminiscent of the past. These include 1) arbitrary inference or drawing conclusions without evidence or in the face of contrary evidence, 2) overgeneralization, 3) selective abstraction or ignoring the context by fixating on a detailed aspect of a situation, 4) magnification or minimization, and 5) personalization. Depressive affect is

stimulated by events that evoke negative cognitions instead of vice versa.

Loeb et al., (1964) conducted a study designed to examine the effects of manipulated success experiences on self-ratings of mood, self-confidence, and perception of others in depressed and nondepressed subjects. Both groups reported increased self confidence and happiness with success experiences. "Successful" subjects also perceived others as happier than did "Failure" subjects. "Successful" depressives predicted they would perform better on a word production task than any of the other groups. "Failure" depressives predicted poor performance, but their predictions did not differ from "Failure" nondepressed subjects.

A second study (Loeb, Beck, and Diggory, 1971) with psychiatric outpatients found that depressives and nondepressives initially had similar levels of aspiration, but that depressives expected to perform less well, and rated their performance less favorably than nondepressives. Experience with success was found to enhance the work performance of depressives, whereas prior experience with failure enhanced that of nondepressives. These results fit nicely with the predictions made by the integrative model of reactance-learned helplessness. They seem to suggest that experience with helplessness in depressives does diminish expectations for control and subsequent performance. Experience with previous control, however, results in greater

reactance in depressives. For the nondepressed group a little helplessness training, that is failure, was more successful in eliciting reactance.

Cognitive theory resembles the theory of reactance-helplessness in the importance it ascribes to the role of thought in depression. Beck's theory differs from the Wortman-Brehm model in the proposal that negative expectancies lead to depression. In contrast, the reactance-learned helplessness theory suggests that negative expectancies often result from experience with uncontrollable outcomes as well as lead to helpless behavior.

Psychodynamic Theories

Freud (1917) was the first to make the distinction between normal grief or mourning and pathological grief or depression. He suggested that the depressed individual displays extraordinary self-criticism, "an impoverishment of his ego on a grand scale" (p. 246), whereas, in mourning it is the world which has become poor and empty. According to Freud, both normal mourning and pathological mourning may be precipitated by the significant loss of a person, an ideal, or an abstraction. In the depressive, however, the self-reproaches are often out of proportion to reality. Freud suggested they were in truth reproaches against a love object, which had been displaced from the object onto the patient's ego.

Developmentally, Freud posited that the melancholic (depressive) is fixated at a stage characterized by strong self-love and ambivalent relations towards others. In the oral stage, the individual identifies with others to such a degree that differentiation between self and other is often blurred. Inevitably, the individual is frustrated in obtaining narcissistic supplies such as love and milk. Freudian theory suggests that aggression, which is experienced towards the depriving object, becomes directed against the self due to the introjection of the object and the individual becomes depressed.

Abraham (1924), another early analytic writer, suggested that the self-reproaches of the depressive are not only accusations against the introjected object, but are also directed against the previously introjected cruel conscience. He labeled four contributions to the etiology of depression. The first was a constitutionally strong oral eroticism. Second, Abraham believed this factor predisposes an individual to oral fixation because of intense experiences of oral gratification and frustration. The third factor contributing to depression was a severe injury to infantile narcissism from successive disappointments in love by parental figures. Finally, these experiences occur before the oedipal situation has been resolved.

Rado (1928) elaborated more specifically on the importance primitive object splitting carries for depression.

In essence, he argued that when the predepressive is in the process of introjecting the parents, he or she introjects the "good" or pleasure conferring object into the superego and the "bad" or dysphoric inducing object into the ego. In the depressive, then, the superego acts to purge the ego of its "bad" object in order to restore self-esteem.

A more detailed explanation of infantile object relations predisposing individuals to depression was given by Melanie Klein (1934). Klein believed that development progresses through paranoid and depressive stages. In the paranoid stage, the infant confuses internal and external reality. This confusion takes place in the presence of strong innate sadistic impulses which are further reinforced by frustrations in the feeding process. In this phase, the ego is too fragmented and too suspicious to sustain a good identification with the nurturing figure.

At about 4-5 months the depressive phase begins. The child begins to discriminate between internal and external reality as well as to integrate good and bad components to the same object. Thus, it becomes of primary importance for the ego to control its hostile impulses toward the good object. For Klein, depression was the result of anxiety and guilt over the expectation of losing the object. She regarded the successful resolution of the depressive position as the most critical determinant of subsequent

personality integration, interpersonal relations, and vulnerability to personality disorders.

In contrast to Klein, most recent psychodynamic theorists have placed more emphasis upon the role narcissism plays in depression. Jacobson (1953) believed that early self and love object images provide the core for both the superego and ego. The superego consists of the ego ideal and of the critical superego. The child is vulnerable to depression when he/she becomes aware of its helplessness and dependency. Depending upon the degree of the discrepancy between the ego ideal and the self representation, high or low self-esteem results. In other words, like other psychoanalytic theorists, Jacobson suggested that primary depression results when the individual fears that he or she will destroy the "good" object. An over vigilence of destructive impulses towards the goal of maintaining the "good" object results in the individual's defensive devaluation of both self and love object.

Fast (1967) suggested that the individual's failure to acknowledge that the self includes good and bad aspects as do other human and nonhuman objects, and the failure to achieve self-object boundaries results in a lack of confidence or helplessness in the self's ability to overcome bad states. He pointed out that these developmental deficiencies result in a generalization of depressive feelings to include feelings of inferiority and inadequacy.

The theme of helplessness is the cornerstone of Bibring's (1953) neo-analytic explanation of depression. He emphasized that depression is the realization of powerlessness and helplessness of the ego in regard to the goal attainment of love and approval; in short, loss of self-esteem. Thus, in contrast to the psychodynamic writers discussed previously, Bibring contends that depression is essentially an intra-ego rather than a superego-ego conflict. Self-aggression so often noted by the earlier analytic writers is seen as secondary to the loss of self-esteem and helplessness. It is not viewed as intrinsic to depression. Thus, aggression against the self, according to Bibring, results from a perceived helplessness to direct it outwardly. From this perspective, the infant's experience of frustrated helplessness and ensuing depression provides a prototypical reaction pattern which is reactivated by subsequent similar events. The likelihood of returning to a state of helplessness depends upon the individual's constitutional tolerance for persistent frustration, the severity and duration of helplessness experienced during infancy, subsequent developmental factors that tend to modulate or magnify the intensity and ease of activation of helpless states, and the type and severity of the event precipitating the present state of helplessness. Bibring believed that loss of self-esteem holds a signal function alerting an impending state of helplessness. Fluctuations

in self-esteem set in motion preventative measures which work against the ego's returning to a state of helplessness.

Zetzel (1965) supported Bibring's belief that depression is characterized by loss of self-esteem. She felt that the ability to tolerate depressive affect attributable to real experiences of loss, disappointment, and frustration without significant ego regression is established between the end of the first year and the beginning of the oedipal period. She believed that the experience of depression is a prerequisite for optimal maturation and that an inability to tolerate depression may lead to loss of control, impairment in reality testing, psychosis, suicide, or murder. Like Bibring, Zetzel supported the hypothesis that depression has a signal function leading to increased adaptation as the result of the individual's ability to respond positively to available sources of gratification.

The developmental task relevant to the tolerance and mastery of depression is of a dual nature, according to Zetzel. It involves both the tolerated passive experience of the inability to modify a painful existing reality and the mobilization of appropriate responses to available areas of gratification and achievement. In males there is a premium on activity as a masculine ego ideal. Thus, male depressives are more prone to fear and deny helplessness and to seek active solutions to such states without acknowledging real inability to modify a painful situation.

Females, on the other hand, too readily acknowledge feelings of helplessness and passivity. Consequently, they are handicapped in establishing mastery, resolution, and optimal adaptation. In a sample of 72 patients, 42 women and 30 men, Zetzel noted that 23 of the women complained of depression while only 6 of the men did so. A true Freudian at heart, Zetzel suggested these propensities have their roots in biology. She believed that castration anxiety in men and penis envy in women aggravate mastery of helplessness experienced in the oral stage.

As a group, the psychodynamic theorists place considerable emphasis on the ambivalent feelings the infant has toward the nurturing object due to the inevitable frustrations encountered in getting its needs met. Self-aggression is viewed as aggression toward the object which is introjected to preserve the good object. Depression is the subsequent result in which the individual realizes his helplessness in attaining love and affection. The tolerance and mastery of depression is viewed by analytic writers as a developmental task which must be successfully resolved if the individual is to achieve satisfactory personality integration.

Sex Role Identity

Recent literature suggests that male and female differences may have much more to do with socialization than

biology, as Zetzel once suggested. Sex role expectations have been found to cluster into traits of competence for men and interpersonal warmth and expression for women (Broverman, Vogel, Broverman, Clarkson, and Rosenkrantz, 1972; Rosenkrantz, Vogel, Bee, Broverman, and Broverman, 1968). In other words, men are expected to be self-confident, independent, objective, active, and competitive. Women, on the other hand, are expected to be gentle, sensitive to the feelings of others, neat, and able to express tender feelings. Members of each sex are expected to have role consistent traits and to have a relative absence of the traits ascribed to the other sex. For example, men are anxious about feelings of dependency, women are uncomfortable about showing aggression.

In accordance with these expectations, Maccoby and Jacklin (1974) found that teachers and mothers rated girls as more dependent than boys. When observed through controlled studies in which researchers observed what children actually did, however, girls were not consistently more dependent than boys. Maccoby and Jacklin suggest that dependency and attachment behavior are characteristic of all children and that there is little or no sex differentiation from infancy through the preschool period.

However, Kagan and Moss (1962) found that dependency is a stable trait in girls when measured from age three into early adulthood, while it is not for boys. Girls are

permitted to stay dependent, while boys are not and are often punished for dependent behavior.

In terms of activity and aggression, boys are usually found to be more active and more physically aggressive than females from a young age (Fitzgerald, 1975; Maccoby et al., 1974). The suggestion is that biology makes a large contribution to the greater activity of boys, but that the socialization process encourages aggression on the part of males while females are actively punished for aggressive behavior. Thus, aggression becomes a stable trait for males and dependency is more stable for girls.

Children also participate in the socialization process of sex role standards. Kohlberg (1966) suggested that by age three children acquire a label of the self as girl or boy and then strive to be "good" girls and boys. Girls and boys act in ways in which they feel are role consistent and for which they are rewarded for punished. Boys are quicker to adopt role consistent behaviors since they are punished more for role deviation. About three-fourths of kindergarten boys prefer boys' toys to girls' toys and prefer the father's role to the mother's role (Donelson, 1973). By second grade, 90% of the boys express these role consistent choices.

Girls, on the other hand, are allowed to display more boy behavior, and are slower and more variable in adpoting feminine preferences and behavior. Ten year old girls are

less feminine than four year old girls (Donelson, 1973). And as late as fifth grade, 37% still prefer masculine toys and 21% prefer to be a father than a mother. A likely conclusion is that girls experience male roles as more desirable than female roles.

Differences in self-concept seem to reflect sex role standards. College age females describe themselves in interpersonal terms in contrast to the individualistic terms of men. Females more than males want to be loving, affectionate, impulsive, sympathetic, generous, sensitive, reserved, and uncertain. Males more than females want to be practical, assertive, dominating, competitive, critical, self-controlled, rational, reasonable, and ambitious (Block, 1973).

Research by Donelson (1973) has consistently demonstrated that women are better able to accept unfavorable information about themselves while tending to resist accepting the favorable. Men, on the contrary, are better able to accept favorable information than unfavorable information about themselves.

In regards to achievement and affiliation orientation, Donelson and Gullahorn (1975) have found that socialization and role based expectations tend to inhibit affiliation in males and achievement in females. Across many age groups and areas of achievement females have also demonstrated lower expectancies for success than males (Brandt,

1958; Crandall, 1969; Donelson et al., 1975). Level of aspiration in women is frequently very high or very low and changes unpredictably with feedback about actual achievement. Men with a high need for achievement are more likely to have realistic levels of achievement and to use feedback appropriately. Donelson (1975) suggests these differences may be the product of both greater fear of failure and fear of success on the part of females. Fear of failure operates in women to keep them away from situations in which the failure would be a meaningful reflection of their own abilities. Fear of success also keeps women from risky situations, but here the expectancy of negative consequences such as censure from other people or from one's self inhibits task performance (Horner, 1972).

In summary, the research suggests that females are consistently rewarded for dependent, helpless behavior and that they strive for interpersonal competence rather than intellectual competence. In contrast, males are rewarded for activity and aggression and strive for achievement and mastery rather than interpersonal relatedness.

Sandra Bem (1974) has made the suggestion that strongly sex typed individuals might be seriously limited in the range of behaviors available to them as they move from situation to situation. She argues that people who are both assertive or instrumental and yielding or

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expressive depending upon the situational appropriateness of these behaviors may be more psychologically healthy. From this perspective the more highly identified a person is with masculine or feminine standards, the more likely he/she will conform to these societal expectations in the face of uncontrollable outcomes. In contrast, the more androgynous a person is, that is the larger his/her behavioral repertoire, the less likely he or she will demonstrate passivity if female or reactance if male without respect to the situational appropriateness of these behaviors.

Integrating the Theories

Looking at depression from a number of theoretical perspectives offers the clinician an opportunity to synthesize the unobservable unconscious dynamics which characterize the psychoanalytic theories with the observable, but often subjective thought disorders proposed by cognitive theories, and the observable, objective behavior described by Wortman and Brehm's reactance-learned helplessness model.

In essence, all of these theories have their historic roots in the psychodynamic school. The cognitive and behavioral theorists have attempted to operationalize many of the basic psychodynamic concepts about depression and in doing so have lost sight of their very roots. Instead of discussing egos, ids, and superegos, they discuss motivation, expectations, and aversive control. Internal processes are explained in terms of external behavior.

Reactance and learned helplessness in the model presented by Wortman and Brehm is clearly related to the psychodynamic theory of Bibring, but holds more than a resemblance to the early theory of depression first outlined by Freud. Freud suggested that as the result of inevitable frustrations in obtaining narcissistic supplies, the infant experiences aggression toward the depriving object. These inevitable frustrations sound not unlike the uncontrollable outcomes described in learned helplessness theory. Reactance theory like Freudian theory predicts that individuals will react to loss of control (frustrations in obtaining narcissistic supplies) by becoming hostile and aggressive towards those restricting their freedom. Freudian theory suggests that this aggression is internalized in order to preserve the good object, thus resulting in depression. The Wortman-Brehm model suggests that if the individual struggles to reassert control (demonstrates reactance) and fails, then depression or helplessness results. The self reproach described by Freud appears to be the attributions of causality to self for lack of control discussed by the behaviorists.

Finally, Freud suggests that past experience predisposes the individual to generalize inappropriately in the present. The person reacts with depression to situations reminiscent of the past, as if he or she expects to be disappointed in getting dependency or narcissistic needs

fulfilled. Likewise the basic tenet of the learned helplessness model is that on the basis of past experience in which outcomes were uncontrollable, the person generalizes inappropriately to new situations and manifests helplessness and passivity when responses on his/her part could affect the outcome.

It would not seem unreasonable to propose that the more important obtaining love, care, and affection is to an individual the more he/she will react to experiences of deprivation. And the more experiences a child has of not being able to obtain these supplies, the more helplessness or depression will be manifested. Abraham made essentially this point in his discussion of factors contributing to the etiology of depression, yet these are also predictions made by the reactance-learned helplessness model.

Jacobson suggested that the child is vulnerable to depression when he/she becomes aware of its helplessness and dependency, in other words, when he/she realizes that it cannot completely control outcomes which are very important. She also discussed the importance of the discrepancy between the ego ideal and the self in the formation of self-esteem. These appear to be what behaviorists describe as expectations for control and experiences with control.

Bibring was much more thorough in his treatment of self-esteem as a factor in depression. Depression, in his

view, is the realization of powerlessness and helplessness of the ego in regard to goal attainment, or loss of self-esteem. He saw loss of self-esteem as a signal function which results in attempts to re-establish self-esteem in order to prevent helplessness. This theory, while admittedly a departure from classic analytic thought, appears to be a psychodynamic antecedent of the learned helplessness and reactance model. It proposes that reactance will be manifested in the face of uncontrollable outcomes and that helplessness will result when attempts to regain control fail.

Bibring described the ego's realization that it could not get love and affection as a prototypical pattern evoked by subsequent similar events. Here again, the importance of learning and inappropriate generalization is obvious. Listed first among factors that would predispose one to helplessness and depression was a constitutional intolerance for persistent frustration. Perhaps this has to do with a constitutional vulnerability to norepinephrine depletion. This kind of biochemical deficit has been found in animals subjected to helplessness training as noted earlier. Second on Bibring's list was the severity and duration of helplessness in infancy, that is, uncontrollable outcomes. The third factor listed was developmental factors that modulate or magnify the intensity and ease of helplessness. Fourth was the type and severity of the

precipitating events. These correspond roughly to expectations of control and the importance of outcome, respectively.

Zetzel supports Bibring's view that loss of self-esteem serves a signal function. She also believes that the ability to tolerate depression without significant ego regression is a developmental task of prime importance. The mobilization of appropriate responses to available areas of gratification and achievement is part of the developmental task necessary for the development of object relations, learning, and ultimately the capacity for happiness. In the language of the reactance-learned helplessness model, the ability to recognize and distinguish between situations in which the outcome is uncontrollable and in which it is controllable is important as is the ability to attempt to regain control or to demonstrate psychological reactance.

In addition, Zetzel suggests that males and females differ in their tolerance for and mastery of helplessness. More specifically, her theory suggests that males will deny feelings of helplessness since activity figures so prominently in the masculine ego ideal. Instead, they will make many attempts at mastery and success. Females will readily acknowledge feelings of helplessness and passivity and fail to initiate and complete attempts to achieve mastery. According to this theory, then, men should demonstrate more reactance and possibly more helplessness in the face of uncontrollable outcomes than women. Women, on the other

hand, should certainly demonstrate less reactance and possibly less helplessness than men. As noted previously, the research on sex role standards suggests that while some male-female differences may have their origins in biology, socialization processes make the major contribution to sex differences. While it is acceptable for females to be dependent and passive, males are expected to be independent and active.

The comparison between psychodynamic theories and reactance-learned helplessness theory highlights several common threads running through both. Perhaps most important is the heavy emphasis upon the effects of past experience on present behavior. Inappropriate generalization, uncontrollable and inevitable frustrations, reactions against such frustrations, and depression or helplessness resulting from inability to change situations, or loss of self-esteem appear to be universal themes.

Naturally, the other behavioral theories also hold much in common with the Wortman-Brehm theory of depression. Briefly, Lazarus' emphasis upon the role of inadequate or reduced reinforcement seems related to the idea of response-reinforcement independence. When important reinforcers are withdrawn and not replaced by a substitute (uncontrollable outcomes) and when the individual cannot achieve mastery in other areas, self-esteem suffers. Lewinsohn suggests that low social skill is responsible for low rates of social

reinforcement in the depressive. Perhaps the suggestion is that the individual learns responses which generalize inappropriately and render him or her helpless in social situations. Ferster's idea that loss of reinforcible behavior leads to depression seems to be related to the proposal that when attempts to re-establish control over outcomes fail, the individual stops attempting to seek reinforcement, and helplessness results. The emphasis Moss and Boren place upon the role of aversive control in depression can also be viewed as a reference to uncontrollable outcomes since lack of control where the outcome is important is likely to be aversive. The authors suggest that aversive control suppresses behaviors that would have been followed by positive reinforcement. In other words, experience with uncontrollable outcomes leads to an expectation of lack of control and consequent helplessness. Finally, the social learning theorists such as Rotter earmark three conditions which may contribute to depression. These include low freedom of movement in an important need area, an element of permanency in the situation, and expectations of never reaching a minimal level of achievement in the need area. At the risk of being redundant these parallel roughly to the variables uncontrollable outcome and importance of that outcome, experience with helplessness, and expectations for control discussed in the reactance-learned helplessness model.

Much of the literature on learned helplessness deals with the negative cognitive set present in the depressed individual. Beck, too, emphasized the role of thought in affective disorders. Like the majority of theorists reviewed, he believes that inappropriate generalizations from past experiences to the present result in depression and loss of self-esteem. Research generated from this orientation suggests that depressives do expect to perform less well than nondepressives. Thus, experience with helplessness does modify expectations as well as subsequent performance.

In summary, while the three major theoretical orientations describe the etiology and symptoms of depression in terms that differ quite substantially, an examination of the variables each views as contributing to the development and/or maintenance of depression reveals them to be quite similar.

Present Study

The purpose of the present study was to examine the effects of varying amounts of experience with helplessness over uncontrollable outcomes on the performance of concept formation problems. The experiment was designed to investigate if subjects who received small amounts of exposure to a no control situation would demonstrate reactance, whereas subjects who received large amounts of exposure

would manifest helplessness as proposed in the reactance-learned helplessness model of depression. Importance of outcome and expectation for control were not manipulated since a curvilinear relationship between experiences of no control and helplessness has not been reliably demonstrated (Wortman, 1977, Note 1).

Subjects' performance was assessed both in terms of ability and persistence on anagrams in a test situation after pretraining in the helpless conditions. Measures of ability included number of trials to learn anagram pattern, number of consecutive solutions before perceiving the pattern, and number of problems solved. Measures of persistence included mean response latency, number of times a new anagram was requested, and trial number upon which the request came.

In addition, differences between males and females in their performance on anagrams under varying amounts of no control (insolvable anagrams) was studied. The author was interested in examining the effects of sex role socialization on patterns of reactance and helplessness in situations in which outcomes were uncontrollable. Finally, the degree of sex role rigidity within subjects was examined as it related to scores of ability and persistence on the test task following experience with helplessness. Sex role rigidity was expected to exaggerate differences between

the sexes, while androgyny was expected to minimize these differences. Attributions for success and failure, as well as ratings of mood were gathered on all subjects in order to obtain additional information regarding the effects of pretraining and testing.

Hypotheses

The following hypotheses were made:

1. Moderate experience with helplessness in the face of uncontrollable outcomes produces more psychological reactance (greater ability or persistence) on cognitive tasks than no experience with helplessness or than considerable experience with helplessness.
2. Considerable experience with uncontrollable outcomes results in more helplessness (less ability or persistence) than no experience with helplessness and than moderate experience with no control.
3. Males experience more reactance (greater ability or persistence) than females in the face of moderate amounts of experience with uncontrollable outcomes.
4. Males experience more helplessness (less ability or persistence) than females in the face of large amounts of experience with no control.
5. The more sex role typed subjects are, the greater are the differences between males and females in the reactance and helplessness manifested. The more androgynous

subjects are the fewer are the differences between males and females in the reactance and helplessness demonstrated.

METHOD

Subjects

The subjects were 80 college undergraduates, 40 males and 40 females, who were enrolled in undergraduate psychology courses at a coed liberal arts university. The subjects participated in the experiment to partially fulfill course requirements. Subjects were assigned equally and randomly among the three experimental conditions, Single Helplessness, Double Helplessness, and No Helplessness pretraining, as well as a fourth Control group which received no pretraining.

Materials

The Bem Sex Role Inventory (Bem, 1974) was employed to determine sex role identity. This instrument consists of 60 items divided equally among three subscales, Masculinity, Femininity, and Social Desirability. Items were selected from a list of 200 personality characteristics that seemed both positive in value and either masculine or feminine in tone. Male and female judges assessed the characteristics for their sex appropriateness and the desirability of sex appropriateness for both sexes. Items were selected if judged by both males and females to be significantly more desirable for men, or women, or if they were judged to be no more desirable for men, or women, (neutral), and if

male and female judges did not differ significantly in their overall desirability judgments of that trait.

Bem's Scale asks a person to indicate on a seven point continuum how well each of the personality characteristics describes himself. The scale ranges from 1 ("Never or almost never true") to 7 ("Always or almost always true") and is labeled at each point.

Subjects receive a Masculinity score, a Femininity score, and an Androgyny score. Masculinity and Femininity scores are the mean scores of items on those subscales. The Androgyny score is a *t* ratio for the difference between a person's masculine and feminine self endorsement. The greater the absolute value of the Androgyny score, the more the person is sex typed or sex reversed, with high positive scores indicating femininity and high negative scores indicating masculinity. The closer the score is to zero, the more the person is androgynous. A social desirability score can also be calculated from the mean score of the neutral items.

Correlations on a large sample of college students (Bem, 1974) revealed the Masculinity and Femininity scores to be independent (males, $r=.11$; females, $r=-.14$). Masculinity and Femininity correlated with Social Desirability, but Androgyny and Social Desirability correlated poorly ($r=.08$ for males; $r=.04$ for females). Test-retest

reliability was high (Masculinity, r=.90; Femininity, r=.93; Social Desirability, r=.89).

Five letter anagrams selected from a list composed by Tresselt and Mayzner (1966) printed on 3 x 5 index cards in lower case letters were used as stimulus materials. Fifteen anagrams in the order 3-4-2-5-1 were employed in pretraining. Twenty anagrams in the order 2-1-5-3-4 were used in the testing situation. In both sets of problems two letters of the word remained in proper sequence, while the other three letters were out of place. Thus, the set of anagrams in the pretreatment and test situations were of equal difficulty. In addition, only anagrams which had mean response times of 100 seconds or less were employed. For the helpless conditions either five (Single Helplessness) or ten (Double Helplessness) anagrams were made insolvable by altering one letter of the solvable anagrams which were presented to subjects in the No Helplessness condition.

A hand held stopwatch was used to measure response latency.

Procedure

Subjects were randomly assigned to experimental groups. Each group, Single Helplessness, Double Helplessness, No Helplessness, and Control, contained 20 subjects, 10 males and 10 females.

All subjects were introduced to the experiment in the following way,

> This is an experiment in learning. You will be asked to fill out several questionnaires and to solve a few problems in concept formation. First, I would like you to fill out this questionnaire. Please indicate for each personality trait how well you think it describes you. The scale goes from 1 for never or almost never true to 7 for always or almost always true. Mark your response along the line as you think the trait applies to you as you really are.

After these instructions, subjects completed the Bem Sex Role Inventory.

Subjects in the three pretreatment groups then received the following instructions,

> The problems you will be asked to solve are anagrams. An anagram is a word puzzle in which the letters of a word have been mixed up and placed in a different order. Your task is to unscramble the letters as quickly as you can in order to find the correct solution, that is the word which the letters make. For example, the letters aewtr make the word water when placed in the correct order. There may or may not be a pattern to finding the correct solutions for the problems. A time limit of 100 seconds per problem will be held. The experimenter will present the anagrams one at a time. When you have reached a solution let the experimenter know by saying "Ready." Then, state the word you believe the anagram spells. Any questions? Here is the first problem.

No Helplessness subjects received 15 solvable anagrams in the pattern 3-4-2-5-1. Single Helplessness subjects received 5 out of 15 anagrams which were insolvable. These were randomly distributed across the pretreatment set. Double Helplessness subjects received 10 insolvable anagrams out of the set of 15. These included the 5 insolvable anagrams in the Single Helplessness condition and an additional 5. When individuals encountered an insolvable

anagram or when they responded with an incorrect solution, they were told "No, that's not the right word," When they found the correct solution, the experimenter responded "Right. Here's the next one." A time limit of 100 seconds was employed.

Following pretreatment subjects were asked to fill out a 19 item Likert type questionnaire (Roth et al., 1975) which asked questions about the subjects' reactions to the pretreatment. Instructions were as follows,

> This is the end of the first part of this experiment. Now will you please fill out this questionnaire. Like the earlier questionnaire indicate your responses of how you are feeling right now along the line.

Subjects in the pretreatment conditions were then given the following instructions for the anagram test situation,

> Now you will be presented with a second set of concept formation problems similar to the anagrams you just worked on. Again, you are to find the word which the letters spell as quickly as you can. Like the last set of problems, there may or may not be a pattern to finding the correct solutions. As before you will be timed. The time limit is 100 seconds. If at any time you cannot find a solution or if for any other reason you wish, you may request a new anagram problem. When you have reached a solution let the experimenter know by saying, "Ready." Then, state the word you believe the anagram spells. Any questions? Here is the first problem.

Control subjects were given the same instructions as subjects in the pretreatment groups initially received.

In addition, like the experimental subjects they were instructed that they could request a new anagram problem.

All 20 anagrams in the test situation were solvable. The pattern for uncoding the anagrams was 2-1-5-3-4.

Again, if an individual gave an incorrect solution the experimenter responded, "No, that's not the right word." When the subject obtained a correct solution, the experimenter responded, "Right. Here's the next one."

Three measures of ability and three measures of persistence were employed. Measures of ability included number of correct solutions, trial upon which the subject reached criterion (criterion defined as 3 correct solutions under 30 seconds), and number of correct solutions prior to reaching criterion. Measures of persistence included mean response latency, trial on which the subject first requested a new anagram problem, and number of requests for new problems.

A second questionnaire (Roth et al., 1975) was administered to all subjects following completion of the test situation. Instructions for completion of this questionnaire were,

> Now will you please fill out this questionnaire. Like the earlier questionnaire(s) indicate your responses of how you are feeling right now along the line. Mark 1 for not true for me to 7 for true for me.

Following completion of the questionnaire, subjects were debriefed and questions answered. Arrangements for entering credit for participation in the experiment were explained.

RESULTS

A 2 X 4 (Sex X Experience with helplessness) factorial design with Sex Role Identity as a covariate was employed in this study. Six dependent measures, three of ability and three of persistence, were gathered as well as measures regarding feelings during both the pretraining and test situations.

Effect of Varying Amounts of No Control

Three multivariate analyses of covariance were performed. The first analysis included all six dependent variables, the second included the three ability measures, and the third, the three measures of persistence. Group means and standard deviations for ability, persistence, and sex role scores are shown in Table 1. Pearson correlations between ability, persistence, and sex role measures are located in Appendix A.

Results of the first multivariate analysis on all six measures revealed no significant effects due to treatment condition (Single, Double, No Helplessness, or Control) as hypothesized. Results of this analysis are presented in Table 2. Moderate experience with helplessness in the face of uncontrollable outcomes did not produce reactance, nor did considerable experience produce helplessness.

Pearson product moment correlations also were calculated between the ability and persistence measures and the amount of helplessness training. (See Table 3.) To this

Table 1

Group Means and Standard Deviations in Parentheses for Ability, Persistence and Sex Role Scores

Group	Number correct	Trials to criterion[a]	Correct before criterion[a]	Mean response latency[b]	Trial anagram requested	Number of requests[b]	Sex role t score[c]
Males							
Single Helplessness	11.60 (3.13)	5.60 (6.83)	3.20 (3.82)	44.19 (12.93)	2.30 (2.26)	4.40 (2.67)	- .81 (2.98)
Dougle Helplessness	10.10 (4.86)	4.90 (7.27)	2.50 (3.10)	35.83 (25.74)	2.80 (2.65)	6.40 (6.15)	- .47 (1.67)
No Helplessness	12.20 (2.70)	6.30 (6.65)	3.60 (3.16)	39.98 (19.87)	1.50 (1.90)	2.90 (3.10)	-1.98 (1.19)
Control	12.40 (4.27)	5.30 (6.34)	3.80 (4.36)	39.39 (14.72)	1.90 (1.85)	4.20 (4.61)	-2.82 (3.43)
Females							
Single Helplessness	12.20 (3.99)	9.50 (7.73)	5.90 (4.40)	25.66 (16.43)	2.90 (4.12)	6.10 (4.50)	.08 (1.68)
Double Helplessness	13.30 (3.56)	11.50 (5.96)	7.10 (3.38)	29.38 (19.05)	2.40 (2.83)	3.90 (3.78)	1.44 (2.38)
No Helplessness	12.20 (6.01)	2.80 (3.61)	2.30 (2.49)	27.84 (24.70)	2.90 (3.10)	5.20 (6.16)	1.11 (2.32)
Control	12.90 (3.63)	6.70 (6.91)	4.00 (4.24)	38.83 (21.24)	1.40 (2.45)	2.80 (4.59)	.47 (1.95)

[a] The lower the score, the higher the ability.

[b] The lower the score, the more persistent.

[c] Negative scores indicate masculine identification; positive scores, feminine identification.

Table 2

Multivariate Analysis of Variance with Sex Role Identity as a Covariate for Treatment Groups on the Six Ability and Persistence Measures

Source	df	F
Experience with Helplessness	3	.90
Sex	1	2.30[a]
Experience with Helplessness x Sex	3	.97
Error	72	-

[a] $p < .05$

Table 3

Pearson Product Moment Correlations Betweeen Ability, Persistence and Experience with Helplessness

	Ability			Persistence		
	Number correct	Trials to criterion	Correct before criterion	Mean response latency	Trial anagram requested	Number of requests
Experience with Helplessness	- .04	.21[b]	.20[a]	- .02	.05	.09

Note: Treatment groups were scaled on the basis of the amount of experience with helplessness for correlation.

[a] $p < .06$

[b] $p < .05$

end treatment groups were scaled on the basis of experience with helplessness. The No Helplessness group was scaled as zero, the Single Helplessness group was scaled as 1, and the Double Helplessness group was scaled as 2. The Control group was not included in this analysis since they did not receive any pretest. Number of trials to criterion was positively correlated with experience with helplessness (r=.21, p<.05). In addition, a trend for number of anagrams correct before criterion (r=.20, p<.06) emerged. Together, these results suggest that increasing experience with helplessness does interfere with subjects' capacity for learning.

Effect of Sex of Subject

Sex of subject had a significant effect on ability and persistence measures, F (1, 72) = 2.30, p<.05. Separate multivariate analyses of covariance on the ability and the persistence measures (Tables 4 and 5, respectively) revealed that the sex difference was due to variation between males and females on the persistence measure, F (1, 72) = 3.12, p<.03. More specifically, mean response latency was shorter for females than for males, F (1, 72) = 7.69, p<.007 as indicated on Table 6 where significant differences and trends for groups based on univariate F tests are reported. In addition to the sex difference found for mean response latency, that is, the average number of seconds the subject took to solve anagrams, a trend for number of anagrams correct

Table 4

Multivariate Analysis of Covariance for Treatment Groups on Ability Measures

Source	df	F
Experience with Helplessness	3	.46
Sex	1	1.41
Experience with Helplessness x Sex	3	1.15
Error	72	-

Table 5

Multivariate Analysis of Covariance for Treatments Groups on Persistence Measures

Source	df	F
Experience with Helplessness	3	.73
Sex	1	3.12[a]
Experience with Helplessness x Sex	3	.77
Error	72	-

[a] $p < .03$

Table 6

Significant Differences and Trends for Treatment Groups Based on Univariate F Tests

Source	Analysis of ability and persistence	Analysis of ability	Analysis of persistence
Experience with Helplessness	-	-	-
Sex			
Correct before criterion	3.21[b]	3.21[b]	
Mean response latency	7.69[a]		7.69[a]
Experience with Helplessness x Sex			
Correct before criterion	2.35[b]	2.35[b]	

[a] $p < .007$

[b] $p < .07$

before reaching criterion also emerged, F (1, 72) = 2.35, $p<.07$. Males learned the anagram pattern in fewer trials.

Correlations between the dependent measures and experience with helplessness were calculated separately for males and females as well. These are shown on Table 7. For males, number of requests for new anagram problems increased as experience with no control increased ($r=.33$, $p<.05$). For females, number of trials to reach criterion ($r=.52$, $p<.002$) and number of correct solutions before criterion ($r=.50$, $p<.002$) increased as experience with uncontrollable outcomes increased. No Group x Sex interaction emerged.

In summary, while experience with varying amounts of no control did not cause significant deficits in performance on cognitive tasks which were solvable, correlations suggest that capacity for learning, or ability, does vary with helplessness experience. Sex of the subject had a differential effect upon measures of ability and persistence. Females spent less time on the average than males in seeking solutions for the anagrams, but there was a tendency for males to solve fewer problems before reaching criterion. Measures of correlation between sex and ability and persistence suggest that scores of persistence varied more with helplessness experience for males, while scores of ability varied more for females.

Table 7

Pearson Product Moment Correlations Betweeen Ability, Persistence and Treatment Group for Males and Females

	Ability			Persistence		
	Number correct	Trials to criterion	Correct before criterion	Mean response latency	Trial anagram requested	Number of requests
Males	- .23	- .08	- .13	- .08	.23	.33[a]
Females	.10	.52[b]	.50[b]	.03	- .06	- .11

Note: Treatment groups were scaled on the basis of the amount of experience with helplessness for correlation.

[a] $p < .05$

[b] $p < .002$

Effect of Sex Role Identity

The final hypothesis proposed that the more subjects are sex role typed, the greater are the differences between males and females in the reactance and helplessness manifested. The more androgynous subjects are, the fewer are the differences between the sexes.

Random assignment of subjects to treatment groups irrespective of their sex role scores made it impossible to use standard criterion to divide subjects into groups of masculine, feminine, and androgynous such that each group had several subjects in each classification. Thus, three way analyses of variance could not be calculated. Instead, two way multivariate analyses between sex role identity and treatment group and sex role identity and sex were calculated. Results of these analyses did not yield any significances. (See Tables 8 and 9.)

Correlations between the measures of ability and persistence and the sex role scores are reported separately for males and females in Table 10. For males, no significant correlations emerged. For females, feminine sex role identification was associated with mean response latency (r=.42, p<.003) and a trend emerged with number of new anagrams requested (r=.24, p<.06). In other words, the more sex role bound females were, the longer they took to seek anagram solutions and the fewer requests they made for new

Table 8

Analyses of Variance Between Sex Role Identity and Experience with Helplessness for Ability and Persistence Measures Combined and Singly

Source	df	F
Ability and Persistence		
Sex Role Identity	2	1.31
Experience with Helplessness	3	.79
Sex Role Identity x Experience with Helplessness	6	.73
Ability		
Sex Role Identity	2	.84
Experience with Helplessness	3	.50
Sex Role Identity x Experience with Helplessness	6	.84
Persistence		
Sex Role Identity	2	1.43
Experience with Helplessness	3	.53
Sex Role Identity x Experience with Helplessness	6	.55
Error	73	-

Table 9

Analysis of Variance Between Sex and Sex Role Identity for Ability and Persistence Measures Combined and Singly

Source	df	F
Ability and Persistence		
Sex	1	1.53
Sex Role Identity	2	1.18
Sex x Sex Role Identity	2	.69
Ability		
Sex	1	1.29
Sex Role Identity	2	.81
Sex x Sex Role Identity	2	.50
Persistence		
Sex	1	1.91
Sex Role Identity	2	1.36
Sex x Sex Role Identity	2	.51
Error	74	-

Table 10

Pearson Product Moment Correlations Betweeen Ability, Persistence and Sex Role Identity for Males and Females

	Ability			Persistence		
Sex Role Identity	Number correct	Trials to criterion	Correct before criterion	Mean response latency	Trial anagram requested	Number of requests
Males	- .17	- .06	- .19	- .01	.19	.17
Females	- .05	.07	.09	.42[b]	.12	- .24[a]

[a] $p < .06$

[b] $p < .003$

problems. It should be noted that these correlations ignore the treatment group to which subjects were assigned, thus the effect due to sex role identity was combined with the interaction of sex role identity and the amount of helplessness experienced. Since the interactions involved were negligible (all Fs<1.00), the confounding probably had little effect.

Feelings Questionnaire 1

One way analyses of variance were computed on each question in Questionnaire 1, the questionnaire which was presented after the pretraining. Means, standard deviations, and F ratios for the Single, Double, and No Helplessness groups are presented in Table 11. Significant differences emerged for the question: "Performance indicative of ability to do well in college," F (2, 57) = 7.87, p<.001; "Felt that no matter what couldn't solve problems," F (2, 57) = 5.84, p<.005; "Things beyond control," F (2, 57) = 4.89, p<.01; "Incompetent," F (2, 57) = 4.06, p<.05; "Thought problems insolvable," F (2, 57) = 11.53, p<.001; and "Frustrated," F (2, 57) = 6.50, p<.005. Significant differences also emerged for "Pleased about performance on task," F (2, 57) = 8.47, p<.001; "Certainty of having solved problems," F (2, 57) = 12.54, p<.001; and "Unfair," F (2, 57) = 3.51, p<.05.

Table 11

Means, Standard Deviations in Parentheses, and F Ratios for Groups on Questionnaire 1 Items

Question	Single Helplessness	Double Helplessness	No Helplessness	F Ratio
1. Expected to solve problems	5.25 (1.48)	5.00 (1.68)	5.25 (1.20)	n.s.
2. Important to do well	5.20 (1.28)	4.55 (1.60)	5.30 (1.30)	n.s.
3. Performance indicative of ability to do well in college	2.15 (1.34)	1.80 (1.32)	3.50 (1.60)	7.87[d]
4. Confident	4.50 (1.23)	4.10 (1.91)	5.00 (1.49)	n.s.
5. Felt that no matter what couldn't solve problems	3.60 (1.84)	4.05 (2.23)	2.10 (1.51)	5.84[c]
6. Things beyond control	3.45 (1.79)	3.60 (1.63)	2.15 (1.38)	4.89[b]
7. Incompetent	2.55 (1.66)	3.70 (2.20)	2.10 (1.55)	4.06[a]
8. Thought problems insolvable	3.75 (1.83)	4.95 (2.03)	2.10 (1.77)	11.83[d]
9. Stressed	4.40 (1.39)	4.05 (1.46)	3.30 (1.86)	n.s.
10. Frustrated	4.85 (1.46)	4.55 (2.01)	2.90 (1.99)	6.50[c]
11. Bored	2.40 (1.46)	2.75 (1.40)	2.50 (1.35)	n.s.
12. Depressed	1.65 (0.98)	2.70 (1.59)	2.40 (1.78)	n.s.

Table 11 (Continued)

Means, Standard Deviations in Parentheses, and F Ratios for Groups on Questionnaire 1 Items

	Question	Single Helplessness	Double Helplessness	No Helplessness	F Ratio
13.	Angry	2.00 (1.58)	3.00 (2.02)	2.40 (1.87)	n.s.
14.	Anxious	4.15 (1.87)	3.95 (1.79)	4.25 (1.86)	n.s.
15.	Fatigued	2.20 (1.73)	2.85 (1.72)	2.55 (1.60)	n.s.
16.	Pleased about performance on task	3.15 (1.66)	2.05 (1.79)	4.35 (1.84)	8.47[d]
17.	Certainty of having solved problems	4.00 (1.48)	2.90 (1.83)	5.45 (1.50)	12.54[d]
18.	Unfair	1.95 (1.23)	2.85 (1.46)	1.80 (1.36)	3.51[a]
19.	Felt friendly toward the experimenter	5.45 (1.43)	5.35 (1.34)	6.05 (1.09)	n.s.

[a] $p < .05$

[b] $p < .01$

[c] $p < .005$

[d] $p < .001$

Post hoc Scheffé's and Least Significant Difference (LSD) tests were employed in an effort to partial out the variance between the groups. These results are shown in Table 12. Results indicate that Single and Double Helplessness groups differed from the No Helplessness groups using the Scheffé criterion at the .05 level on the following questions, "Performance indicative of ability to do well in college," "Things beyond control," "Thought problems insolvable," "Frustrated," and "Certainty of having solved problems." Differences emerged between the Double and No Helplessness groups for "Felt that no matter what couldn't solve problems," "Incompetent," and "Pleased about performance on task." Using the Scheffé, no significant differences emerged between groups for "Unfair," however, the Least Significant Differences test, a more liberal post hoc measure, indicated that Single and Double Helplessness subjects differed from those in the No Helplessness group on this question.

One way analyses of variance on the questions in Questionnaire 1 were also computed for males and females separately. These results are in Tables 13 and 14 for males and females, respectively. Again, post hoc Scheffé and LSD tests were calculated. These are shown in Table 15 for males and Table 16 for females.

Table 12

Scheffé and Least Significant Difference (LSD) Tests Between Groups on Questionnaire 1 Items

Question	Scheffé	LSD
3. Performance indicative of ability to do well in college	A	A
5. Felt that no matter what couldn't solve problems	B	A
6. Things beyond control	A	A
7. Incompetent	B	B
8. Thought problems insolvable	A	C
10. Frustrated	A	A
16. Pleased about performance on task	B	B
17. Certainty of having solved problems	A	C
18. Unfair	D	E

Note: All subsets differ significantly at $p < .05$.

A - Single and Double helplessness groups differ from No helplessness group (NH).

B - Double helplessness group differs from NH.

C - All three groups differ.

D - No differences emerged.

E - Single and No helplessness groups differ from Double helplessness group.

Table 13

Means, Standard Deviations in Parentheses, and F Ratios for Males on Questionnaire 1 Items

Question	Single Helplessness	Double Helplessness	No Helplessness	F Ratio
1. Expected to solve problems	5.00 (1.15)	4.50 (1.58)	5.30 (1.05)	n.s.
2. Important to do well	5.40 (1.26)	4.50 (1.26)	4.90 (1.37)	n.s.
3. Performance indicative of ability to do well in college	2.40 (1.50)	1.40 (0.69)	3.50 (1.71)	5.80[c]
4. Confident	4.70 (1.25)	4.10 (2.13)	5.55 (1.13)	n.s.
5. Felt that no matter what couldn't solve problems	3.70 (1.76)	3.90 (2.23)	1.70 (1.25)	4.58[b]
6. Things beyond control	3.60 (1.77)	3.80 (1.31)	1.70 (1.33)	6.03[b]
7. Incompetent	2.20 (1.39)	4.20 (2.48)	1.60 (1.26)	5.71[b]
8. Thought problems insolvable	4.00 (2.00)	5.00 (2.05)	1.80 (1.54)	7.56[c]
9. Stressed	4.30 (1.56)	3.60 (1.71)	3.70 (1.94)	n.s.
10. Frustrated	4.60 (1.77)	4.80 (2.09)	2.60 (1.71)	4.23[a]
11. Bored	2.60 (1.71)	2.40 (1.34)	2.40 (1.26)	n.s.
12. Depressed	1.40 (0.51)	3.40 (1.71)	2.20 (1.75)	4.85[b]

Table 13 (Continued)

Means, Standard Deviations in Parentheses, and F Ratios for Males on Questionnaire 1 Items

	Question	Single Helplessness	Double Helplessness	No Helplessness	F Ratio
13.	Angry	2.40 (2.01)	3.60 (2.27)	2.10 (1.37)	n.s.
14.	Anxious	4.30 (2.00)	4.00 (2.05)	4.40 (1.77)	n.s.
15.	Fatigued	1.80 (1.03)	2.70 (1.76)	2.20 (1.75)	n.s.
16.	Pleased about performance on task	3.50 (1.90)	1.70 (1.25)	4.30 (1.63)	6.77[c]
17.	Certainty of having solved problems	4.30 (1.41)	2.80 (1.47)	5.50 (0.97)	10.69[d]
18.	Unfair	1.80 (0.91)	2.90 (1.44)	1.50 (0.52)	5.05[b]
19.	Felt friendly toward the experimenter	5.60 (1.07)	5.50 (0.97)	6.00 (0.94)	n.s.

[a] $p < .05$

[b] $p < .01$

[c] $p < .005$

[d] $p < .001$

Table 14

Means, Standard Deviations in Parentheses, and F Ratios for Females on Questionnaire 1 Items

Question	Single Helplessness	Double Helplessness	No Helplessness	F Ratio
1. Expected to solve problems	5.50 (1.77)	5.50 (1.71)	5.20 (1.39)	n.s.
2. Important to do well	5.00 (1.33)	4.60 (1.95)	5.70 (1.15)	n.s.
3. Performance indicative of ability to do well in college	1.90 (1.19)	2.20 (1.68)	3.50 (1.58)	3.20[b]
4. Confident	4.30 (1.25)	4.10 (1.79)	4.50 (1.64)	n.s.
5. Felt that no matter what couldn't solve problems	3.50 (2.01)	4.20 (2.34)	2.50 (1.71)	n.s.
6. Things beyond control	3.30 (1.88)	3.40 (1.95)	2.60 (1.34)	n.s.
7. Incompetent	2.90 (1.91)	3.20 (1.87)	2.60 (1.71)	n.s.
8. Thought problems insolvable	3.50 (1.71)	4.90 (2.13)	2.40 (2.01)	4.08[c]
9. Stressed	4.50 (1.26)	4.50 (1.08)	2.90 (1.79)	4.27[c]
10. Frustrated	5.10 (1.10)	4.30 (2.00)	3.20 (2.29)	n.s.
11. Bored	2.20 (1.22)	3.10 (1.44)	2.60 (1.50)	n.s.
12. Depressed	1.90 (1.28)	2.00 (1.15)	2.60 (1.89)	n.s.

Table 14 (Continued)

Means, Standard Deviations in Parentheses, and F Ratios for Females on Questionnaire 1 Items

	Question	Single Helplessness	Double Helplessness	No Helplessness	F Ratio
13.	Angry	1.60 (0.96)	2.40 (1.64)	2.70 (2.31)	n.s.
14.	Anxious	4.00 (1.82)	3.90 (1.59)	4.10 (2.02)	n.s.
15.	Fatigued	2.60 (2.22)	3.00 (1.76)	2.90 (1.44)	n.s.
16.	Pleased about performance on task	2.80 (1.39)	2.40 (2.22)	4.40 (2.11)	2.95[a]
17.	Certainty of having solved problems	3.70 (1.56)	3.00 (2.21)	5.40 (1.95)	4.09[c]
18.	Unfair	2.10 (1.52)	2.80 (1.54)	2.10 (1.85)	n.s.
19.	Felt friendly toward the experimenter	5.30 (1.76)	5.20 (1.68)	6.10 (1.28)	n.s.

[a] $p < .06$

[b] $p < .005$

[c] $p < .001$

Table 15

Scheffé and Least Significant Difference (LSD) Tests
For Males on Questionnaire 1 Items

Question	Scheffé	LSD
3. Performance indicative of ability to do well in college	B	B
5. Felt that no matter what couldn't solve problems	B	A
6. Things beyond control	A	A
7. Incompetent	B	E
8. Thought problems insolvable	A	E
10. Frustrated	B	E
12. Depressed	F	F
16. Pleased about performance on task	B	E
17. Certainty of having solved problems	B	E
18. Unfair	B	E

Note: All subsets differ significantly at $p < .05$.

A - Single and Double helplessness groups differ from No helplessness group (NH)

B - Double helplessness group differs from NH.

E - Single and No helplessness groups differ from Double helplessness group.

F - Single helplessness group differs from Double helplessness group.

Table 16

Scheffé and Least Significant Difference (LSD) Tests For Females on Questionnaire 1 Items

Question	Scheffé	LSD
3. Performance indicative of ability to do well in college	D	G
8. Thought problems insolvable	B	B
9. Stressed	D	A
16. Pleased about performance on task	D	B
17. Certainty of having solved problems	B	B

Note: All subsets differ significantly at $p < .05$.

A - Single and Double helplessness groups differ from No helplessness group (NH).

B - Double helplessness group differs from NH.

D - No differences emerged.

G - NH differs from Single helplessness group.

For males, subjects in the No Helplessness group believed their performance was indicative of their ability to do well in college more so than Double Helplessness subjects. Double helplessness subjects expressed significantly greater feelings that no matter what they couldn't solve the problems, and more feelings of incompetence and frustration than the No Helplessness treatment group. They also reported feeling less pleased about their performance on the task, less certainty of having solved the problems, and more feelings that the test was unfair than No Helplessness subjects. Males in the Single and Double Helplessness conditions expressed stronger beliefs that things were beyond their control and the problems insolvable than males receiving all solvable anagrams. Finally, subjects in the Double Helplessness condition scored significantly higher on depression than those in the Single Helplessness condition.

For females, subjects in the Double Helplessness group reported more feelings that the problems were insolvable and less certainty about having solved the problems than No Helplessness subjects using the Scheffé criterion. Results of the Least Significant Difference test also suggested that Double Helplessness subjects were significantly less pleased about their performance than No Helplessness subjects. Other results using this test suggested that females in the No Helplessness condition held stronger beliefs that their performance was indicative of

their ability to do well in college than those in the Single Helplessness condition and were less stressed than either those in the Double or Single Helplessness group.

Thus, on the whole, the significant differences between groups on Questionnaire 1 are in the direction which the reactance-learned helplessness model would have predicted. Experience with uncontrollable outcomes generally resulted in feelings of lack of control, incompetence, frustration, stress, and depression.

Feelings Questionnaire 2

Surprisingly, no significant differences between all four treatment groups emerged on Questionnaire 2. (See Table 17.) Only a trend for "Angry" emerged, F (3, 56) = 2.38, $p<.07$.

Differences Between Questionnaires

It was possible that most of the group differences were related to the test of solvable anagrams which intervened between the two questionnaires, although some of the effect might have been due to repeated testing. Therefore, t tests were calculated on change scores for those questions included on both questionnaires. Significant comparisons between change scores for Single and No Helplessness subjects are reported in Table 18. Those between Double and No Helplessness subjects are shown in Table 19.

Table 17

Means, Standard Deviations in Parentheses, and F Ratios for Groups on Questionnaire 2 Items

Question	Single Helplessness	Double Helplessness	No Helplessness	Control	F Ratio
1. Motivation during task	5.36 (0.89)	5.40 (1.04)	5.30 (1.41)	5.20 (1.19)	n.s.
2. Confident	4.55 (1.19)	4.50 (1.27)	4.15 (1.56)	4.18 (1.30)	n.s.
3. Feeling that no matter what couldn't solve problems	3.05 (1.87)	3.85 (1.81)	3.05 (1.66)	2.45 (1.09)	n.s.
4. Things beyond control	3.10 (1.88)	3.20 (1.82)	2.95 (1.73)	2.60 (1.42)	n.s.
5. Problems unsolvable	2.80 (1.67)	3.75 (1.88)	3.15 (1.98)	3.15 (1.69)	n.s.
6. Incompetent	2.42 (1.53)	2.90 (1.51)	3.00 (1.59)	2.65 (1.34)	n.s.
7. Systematic approach in solving problems	5.15 (1.18)	4.50 (1.96)	4.65 (2.03)	5.05 (1.57)	n.s.
8. Wanted to do best on problems	6.15 (1.04)	6.10 (1.16)	5.65 (1.56)	6.15 (0.74)	n.s.
9. Involved	5.80 (1.05)	5.45 (1.39)	5.65 (1.18)	5.75 (0.96)	n.s.
10. Important to do well	5.20 (1.05)	4.65 (1.72)	4.60 (1.81)	5.15 (1.54)	n.s.
11. Performance indicative of ability to do well in college	2.05 (1.27)	2.10 (1.37)	2.85 (1.49)	2.85 (1.66)	n.s.
12. Aroused	4.45 (1.05)	4.65 (1.59)	4.10 (1.61)	4.50 (1.43)	n.s.

Table 17 (Continued)

Means, Standard Deviations in Parentheses, and F Ratios for Groups on Questionnaire 2 Items

	Question	Single Helplessness	Double Helplessness	No Helplessness	Control	F Ratio
13.	Angry	1.90 (1.07)	2.55 (1.73)	3.25 (1.86)	2.55 (1.86)	2.38[a]
14.	Anxious	3.85 (1.92)	3.65 (1.78)	4.15 (1.72)	4.75 (1.48)	n.s.
15.	Depressed	1.94 (1.35)	2.40 (1.60)	2.60 (1.66)	2.40 (1.56)	n.s.
16.	Fatigued	2.80 (1.93)	2.45 (1.82)	3.55 (2.06)	3.40 (2.03)	n.s.
17.	Bored	2.45 (1.50)	2.20 (1.43)	2.30 (1.86)	2.55 (1.60)	n.s.
18.	Unfair	1.90 (1.16)	2.30 (1.30)	2.25 (1.40)	1.75 (0.91)	n.s.
19.	Felt friendly toward the experimenter	5.45 (1.31)	5.45 (1.43)	5.94 (1.02)	5.60 (1.60)	n.s.

[a] $p < .07$.

Table 18

Significant t Tests on Change Scores Between Questionnaires with Means, and Standard Deviations in Parentheses for Single vs No Helplessness Subjects

Question	Mean Difference Scores: Single Helplessness	Mean Difference Scores: No Helplessness	t value
Confident	- .05 (.88)	.84 (1.46)	- 2.32[a]
Felt that no matter what couldn't solve problems	.55 (1.87)	- .95 (1.98)	2.45[b]
Things beyond control	.35 (1.38)	- .80 (1.76)	2.29[a]
Incompetent	.52 (.78)	- .94 (1.17)	3.09[c]
Thought problems unsolvable	1.95 (1.87)	- 1.05 (2.83)	2.63[b]

[a] $p < .05$

[b] $p < .01$

[c] $p < .005$

Table 19

Significant t Tests on Change Scores Between Questionnaires with Means, and Standard Deviations in Parentheses for Double vs. No Helplessness Subjects

Question	Mean Difference Scores: Single Helplessness	Mean Difference Scores: No Helplessness	t value
Confident	- .40 (1.90)	.84 (1.46)	- 2.29[a]
Felt that no matter what couldn't solve problems	1.20 (1.93)	- .95 (1.98)	3.47[d]
Things beyond control	.40 (1.31)	- .80 (1.76)	2.44[a]
Incompetent	.80 (1.98)	- .94 (1.17)	3.36[c]
Thought problems unsolvable	1.20 (1.70)	- 1.05 (2.83)	3.04[c]
Angry	.45 (1.57)	- .85 (2.15)	2.18[a]
Unfair	.55 (.88)	- .45 (1.84)	2.18[a]
Felt friendly toward the experimenter	- .10 (.30)	.21 (.63)	- 1.94[e]
Fatigued	.40 (1.72)	- 1.00 (1.58)	2.67[b]

[a] $p < .05$

[b] $p < .01$

[c] $p < .005$

[d] $p < .001$

[e] $p < .06$

Briefly, No Helplessness subjects decreased in confidence, and increased feelings that no matter what, they couldn't solve the problems, and that things were beyond their control. They expressed greater increases in feelings of incompetence, and beliefs that the problems were insolvable in comparison to Single Helplessness subjects. In contrast to Double Helplessness subjects, those in the No Helplessness group decreased in confidence and feeling friendly toward the experimenter. Between questionnaires feelings that no matter what, they couldn't solve problems, things were beyond their control, and the problems were insolvable increased for the No Helplessness group. In addition, they reported more changes in feelings of incompetence, anger, unfairness, and fatigue.

Summary

While the number of insolvable anagrams or the amount of experience with uncontrollable events did not produce significant differences in the mean scores of subjects on ability and persistence, the number of significant correlations between amount of experience with helplessness and performance measures suggests that there is a relationship between lack of control and capacity to learn and persistence. Results from Questionnaire 1 support the reactance-learned helplessness theory which predicts that a little experience with lack of control results in psychological

reactance, while considerable experience results in helplessness. Several sex differences emerged, but no interaction between sex and treatment group as hypothesized. Finally, sex role boundedness was found to relate to longer mean response latency and fewer requests for new anagrams for females, while no significant effect emerged for males.

DISCUSSION

The Reactance-Learned Helplessness Model

Contrary to the hypotheses suggested by the Wortman-Brehm model of depression, subjects who were exposed to moderate amounts of experience with helplessness, in this case 5 insolvable anagrams out of a set of 15, did not demonstrate psychological reactance in the form of increased ability and persistence scores on a set of solvable anagram problems. In addition, subjects who were exposed to large amounts of experience with no control, in this experiment, 10 insolvable anagrams out of a set of 15 did not demonstrate helplessness as measured by decreased scores of ability and persistence in comparison to subjects receiving either all solvable or no anagrams in the pretest. However, a relationship did emerge between amount of experience with no control and number of trials to criterion as well as a trend for number of anagrams correct before criterion. In other words, while group means on persistence and ability scores did not differ, the more experience subjects had with lack of control, the longer it took them to learn the anagram pattern. Thus, while not overwhelming, the results of this experiment support at least the learned helplessness part of the Wortman-Brehm model that considerable experience with uncontrollable outcomes interferes with the capacity to learn.

While the behavioral measures failed to unearth any significant differences in the mean scores between groups, analyses of the questionnaire administered after the pretest indicate that the treatments in fact did have a differential effect upon the affective and cognitive states of the subjects. Combining data for males and females, the results suggested that experience with either moderate or high levels of helplessness resulted in the subjects' feeling less in control and less certain about their performance, that is their ability to influence the outcome, as well as more frustrated, than did experience with no helplessness.

Subjects in the Single Helplessness and Double Helplessness conditions also rated "Performance indicative of ability to do well in college" as less true for them than subjects in the No Helplessness condition. This may reflect a defensive lowering of the evaluation of the outcome, a prediction made by reactance theory. In other words, when confronted with situations over which they could exert little control, subjects denied that the outcome reflected their ability, while subjects who had control believed their performance reflected their ability. On the other hand, the ratings in question could represent realistic interpretations of the situation.

A more liberal post-hoc measure additionally revealed that subjects in the Double Helplessness condition thought

the problems were insolvable and felt less certain of having solved them than those in the Single Helplessness condition, who felt this way more than subjects in the No Helplessness condition. As expected, subjects in the Double Helplessness condition felt more incompetent and less pleased about their performance as well as more lacking in control than those in the No Helplessness group.

When results for males alone were considered, they additionally revealed that individuals in the Double Helplessness condition were more depressed than those in the Single Helplessness group. Whether this difference was due to the pretraining with insolvable anagrams or to other extraneous factors is uncertain. However, these results supported the prediction of the reactance-learned helplessness model of depression.

Thus, the differences between subjects exposed to moderate and and considerable experience with helplessness supported predictions made by the reactance-learned helplessness model for measures of affect and thought. Clear differences also emerged between subjects experiencing some lack of ability to influence the outcome and subjects experiencing none. According to the learned helplessness model (Seligman, 1972, 1974), these results are the product of individuals' perceiving that events are uncontrollable. Perceiving that one's behavior (response) has nothing to

do with the outcome (reinforcement) results in feelings of lack of control and helplessness.

As noted earlier, no significant differences between treatment groups emerged in the analysis of items from Questionnaire 2. A trend for "Angry" suggested that No Helplessness subjects were more angry than those in the other groups, a prediction which would not have been made by the reactance-learned helplessness model. The lack of significant differences on this questionnaire which followed the test of solvable anagrams, and the lack of differences between groups in the mean scores for ability and persistence raises the question, "What went wrong?" Several possibilities exist. First, the pretraining may have not been successful in inducing reactance or learned helplessness. Second, the set of test anagrams or the measures made on them may have obscured the results. And finally, the laboratory methodology may have artificially erased differences between groups which occur in natural settings.

Glazer and Weiss (1976a) have suggested that the duration of the aversive event is an important factor in the production of interference effects based on learning. In their view, both the strength and the duration of the aversive event influence the ability to learn. Their research found that longer shocks produced more interference with learning over time with rats. Was the pretraining session of 15 anagrams, in one condition 5, and in one, 10 of

which were insolvable, an aversive event of long enough duration to produce deficits in performance? First of all, perhaps one should ask, "Was it aversive?" According to results from Questionnaire 1, it certainly did not appear to be pleasurable. Subjects reported feelings of frustration, stress, depression, and incompetence, as well as lack of control. They rated their performance as less indicative of their ability to do well in college than subjects who received no insolvable anagrams. Obviously failure to solve anagrams in a psychology experiment is nowhere nearly as aversive as is the death of a loved one, loss of a job, or breakup with a boyfriend or girlfriend. Putting the limitations of a laboratory study aside for a moment, the insolvable anagrams did appear to aversively affect the emotion and thought of those subjects in the Single Helplessness and Double Helplessness conditions.

Whether the experience was of long enough duration or intense enough to interfere with subsequent learning is not certain. In this experiment, it lasted only about 30 minutes at the most, in contrast to studies with animals in which experience with helplessness has been administered generally for at least 1 to 1-1/2 hours (Seligman and Beagley, 1975) and as long as 48 hours (Weiss, 1971c). One study with human subjects which reported learned helplessness effects consisted of helplessness sessions of about 25 minutes (Roth et al., 1975),

but most human studies have not reported time spent in helplessness training.

Two other questions about the nature of the pretraining and its effect on subjects arise in connection with the Wortman-Brehm model. First, Wortman et al., (1975) predict that reactance will only be manifested if individuals expect to have control. Did the subjects expect to be able to solve the anagrams? Results from Questionnaire 1 revealed no differences between groups on this question and further indicated that all subjects expected to solve the problems. The mean score was 5.17 on a scale of 1 for "Not true for me" to 7 for "True for me." Thus, expectations for control cannot account for the absence of reactance.

A second variable to which Wortman and Brehm have paid considerable attention is the importance of the outcome to the subject. As reported earlier, Roth et al., (1975) found that increasing the importance of the outcome increased the likelihood of helplessness effects. Did the subjects in this experiment believe it was important to do well or did their lack of investment in the task minimize the differences between groups? Again, subjects did not differ on their ratings of "Important to do well." The mean score for the three groups on Questionnaire 1 was 5.02, indicating that it was important for them to do well. Results from Questionnaire 2 also indicate that subjects were well motivated ($\bar{X}$ = 5.33), and involved ($\bar{X}$ = 4.90).

It seems unlikely, then, that the importance of the outcome accounts for the lack of significant differences between groups on the ability and persistence measures.

The only question about the pretraining which remains unanswered is whether or not it was of long enough duration or severely aversive enough to produce deficits in learning and persistence. It may be that repeated or longer exposure to insolvable cognitive problems is necessary to induce behavioral as well as emotional deficits.

The second possible source for the lack of significant differences between the groups may be in the set of solvable anagrams or in the measures of ability and persistence taken on them. Results of *t* tests on change scores between the two questionnaires demonstrated that subjects in the No Helplessness condition were adversely affected by the second set of anagrams. They lost confidence and feelings of competence as well as increased their beliefs that things were beyond their control, the test, unfair, and the problems, insolvable. It was this group who expressed anger ($\bar{X}$ = 3.25), in contrast to the other three groups (SH = 1.90, DH = 2.55, C = 2.55). The No Helplessness subjects also reported more fatigue.

From comments subjects made to the experimenter in the debriefing session, it may have been the case that the second set of anagrams was more difficult than the first. Many subjects in the No Helplessness condition guessed

that the purpose of the experiment was to determine the difference in problem solving ability on easy and hard anagrams. While counterbalanced for difficulty according to Tresselt et al., (1966) for number of letters out of place and solution time, the order 2-1-5-3-4, of the test anagrams may have been more difficult than that of the pretraining anagrams, 3-4-2-5-1.

These findings suggest that the test set of anagrams may have been as aversive to subjects in the NH condition as the insolvable anagrams were to those in the SH and DH groups, thus erasing differences between groups on ability and persistence measures. In the future, the test set of anagrams might be made easier than the pretraining set, thus facilitating the measurement of learning impairment and passivity. If subjects who have received a little helplessness training perform better, and subjects who have received a lot of helplessness training perform worse than control subjects on a set of anagrams that are slightly easier than the pretraining set, reactance and learned helplessness will certainly have been demonstrated.

Another problem which Maier and Seligman (1976) have cited with learned helplessness studies is that exposure to aversive outcomes produces deficits on some escape tasks but not on others. According to the authors, some measures for assessing learned helplessness are simply insensitive to behavioral deficits. Perhaps this is the case with

measures such as number of trials to learn anagram pattern and number of times a new anagram is requested.

Results of the questionnaires certainly indicated that feelings were affected by experience with helplessness so why not behavior? Other authors have found similar discrepancies in the effects of helplessness on affect and behavior. It should be noted that Hiroto et al., (1975) found no impairment of anagram solving ability or persistence with subjects who had cognitive pretraining and cognitive testing, while they did in three other combinations of instrumental and cognitive pretraining and testing. A study of Roth et al., (1974) also found no differences in problem solving ability between groups which had and had not received helplessness training, while they did find significant differences in ratings of affect. Other studies, however, (Hiroto et al., 1975; Klein et al., 1975; Miller et al., 1975; Roth et al., 1975) have used these types of measures successfully to delineate helplessness effects between groups.

In conclusion, while the anagram methodology has not produced consistent results, some studies have successfully used ability and persistence measures to demonstrate reactance and learned helplessness effects.

A closely related and important factor to consider is feedback. Weiss (1971a, 1971b, 1971c) noted that relevant feedback considerably reduced ulceration in both animals

who did and did not have control over shock. He suggested that the kind of information an organism gets about its responses is the most important factor in control. Maier et al., (1976) also suggest that in situations where inescapable shock has failed to produce deficits in performance and learning this may have been caused by employing test tasks which had a lot of intrinsic feedback. And since feedback facilitates learning, helplessness effects may be minimized.

Use of anagrams in the pretraining part of this experiment provided subjects with highly relevant feedback. When individuals found the correct solution, the experimenter acknowledged this by stating, "Right." When subjects failed to find a solution either because the anagram was insolvable or for any other reason, but made a guess, the experimenter responded, "No, that's not the right word." If no incorrect guesses were made and the subject went to the time limit, the feedback consisted of the experimenter clicking the stopwatch and stating, "Let's try the next one." In other words, the experimenter provided all subjects with highly relevant feedback. The amount of negative feedback varied both across treatment conditions and across individuals as a function of ability. People in the NH condition were sometimes unsuccessful in finding solutions to anagrams as were those in the helpless conditions, and the type of negative feedback, being told "No"

or running out of time, obviously varied across individuals regardless of the treatment group to which they had been assigned.

It is entirely possible that the provision of such feedback inhibited the effects of reactance and learned helplessness. In order to equalize the amount and kind of feedback subjects receive, perhaps the experimenter should simply record the subject's response and the response latency without offering either positive or negative feedback and then present the next anagram. The only feedback subjects would have would be that which they provided for themselves.

Finally, while the results of this experiment and others that have preceded it do not call into question the theory of depression which the Wortman-Brehm model proposes, they certainly raise concerns about the validity of laboratory studies and their generalizability to real life situations which precipitate depressive episodes. Technically, the reactance-learned helplessness model makes predictions about the behavior of individuals as they encounter experience with lack of control on a continuum. The model suggests that initially people will struggle to regain control, but that if they continue to experience that their behavior cannot influence the outcome, they will become helpless.

For methodological reasons, this experiment did not consider helplessness experience longitudinally, that is within the same individuals over time. Instead, treatment groups were discrete entities consisting of individuals who received moderate or large numbers of insolvable anagrams, or lack of control. Use of this type of design may produce an arbitrary distinction which bears no relation to real life or may be a weak aversive experience. Failing a course in school or being fired from a job may be moderate experiences with uncontrollable events in contrast to being paralyzed or losing a loved one through death, but all of these events take place in the context of other environmental and intrapsychic processes which vary over time. So, even if subjects in the SH condition did manifest reactance and those in the DH condition showed helplessness, the question remains, how well do such results lend themselves to an understanding of the etiology of depression?

Maier et al., (1976) have suggested that one of the major problems with the learned helplessness model is that it is vague in its specification of boundary conditions, that is, the generalizability of the situation in which the aversive event occurs to the test situation. Put simply, if an individual is fired from his job because the company is reducing its staff by half, will he act helpless if on the way home his car breaks down? Answers to

such questions may be more easily found in studies of naturally occurring uncontrollable events.

Another problem with learned helplessness which Maier et al., (1976) highlight, is the need to specify conditions under which the perception of response-reinforcement independence develops since perception and objective reality differ. They suggest that learned helplessness should only occur when individuals believe that they cannot influence the outcome. If this is the case, a person who does not perceive himself as lacking control over a spinal cord injury, for example, should not manifest helplessness, while a person who perceives himself as lacking control when a cashier gives him too little change, should manifiest helplessness. Results of a study with spinal cord patients by Bulman and Wortman (1976) support these hypotheses.

The reactance-learned helplessness theory remains at best a theory or a set of hypotheses about how people deal with uncontrollable events.

Differences Between Males and Females

The hypotheses predicted that males in the Single Helplessness condition would demonstrate more reactance than females in the same condition, and that males in the Double Helplessness condition would manifest more helplessness than females in that group. These predictions were generated from the sex role literature which on the whole has noted that American culture places a greater value on

activity, achievement, and competition for males and passivity, interpersonal warmth, and non-assertion for females (Broverman et al., 1972).

At first glance these hypotheses may appear counter-intuitive. It is socially acceptable for females not males, to be passive and helpless in the face of adversity. It was hypothesized that females, due to the ways in which they have been socialized, are more accustomed and more comfortable with their inability to change unpleasant situations and simply do not mobilize themselves to try to change situations. Therefore, their ability and persistence should not suffer greatly in the face of uncontrollable outcomes. Males, on the other hand, are typically socialized to seek control and not to accept their inability to modify a painful reality. Therefore, when placed in a reality situation in which there is no hope of mastery, their problem solving ability and persistence should falter greatly.

As noted earlier, neither psychological reactance nor helplessness was manifested by subjects receiving helplessness training as measured by ability and persistence scores on anagram problems. Thus, in this context, no support was found for the hypothesized differences between males and females. However, a significant sex difference did emerge. Females spent significantly less time in seeking anagram solutions than males. A trend was also found for

number of trials it took males to learn the anagram pattern. On the whole, they learned the pattern more quickly than females.

Correlations between experience with helplessness and the six dependent measures demonstrated that increasing experience with helplessness was accompanied by increases in the number of requests for new anagram problems for men. That is, as helplessness experience increased, persistence decreased. For women, as experience with no control increased, number of trials to criterion and number of anagrams correct before criterion also increased. That is, as helplessness experience increased, ability decreased.

Zetzel (1965) suggested that there are two tasks relevant to the tolerance and mastery of depression. One involves the tolerated passive experience of the inability to modify a painful existing reality and the other involves the mobilization of appropriate responses to available areas of gratification and achievement. Zetzel suggested that male depressives are prone to deny helplessness and to seek active solutions to such states, while female depressives too readily acknowledge feelings of helplessness and fail to establish mastery.

The results of this experiment suggest that for men attempts to seek mastery decline as experience with helplessness increases. When typical approaches to regain control fail again and again, males give up. Women do not

give up as readily, but plod along taking longer (more trials) to achieve mastery than their male counterparts in situations where control is not possible. Thus, it does seem as Zetzel suggested, that males find it difficult to tolerate helplessness. They become impatient and ask for new problems. Females in this study are more tolerant of helpless states, and do not seek active solutions.

Obviously, either failing to recognize that there is nothing that can be done to alter reality, or giving up before one has tried to change a situation, is not a particularly fruitful tactic in managing difficult situations. If, as Zetzel suggested, the ability to tolerate depressive affect and to resolve the depressive position is so crucially important for the development of object relations, learning, and personality integration, then males who can tolerate feelings of helplessness and females who can mobilize themselves should not be as prone to depression.

The Effect of Sex Role Identity

Since individuals vary in the extent to which they have internalized sex role stereotypes, a measure of sex role identity was gathered. The intent of obtaining such a measure was to determine how acceptance or rejection of socially approved sex role standards related to behavior in the face of uncontrollable outcomes. In addition, to a person's unique genetic biology, a myriad of social and environmental factors influence his or her personality

development. Within the universe of males, there are likely to be masculine identified males, feminine identified males, and males who describe themselves in terms of both masculine and feminine traits. Such would be the case with females as well.

Bem (1974) suggested that individuals who are psychologically androgynous may possess a wider behavioral repertoire than those who are strongly sex typed. Thus, androgynous males should be able to tolerate helplessness better than masculine identified males and androgynous females should be more skilled in seeking mastery over helplessness than feminine identified females. These were essentially the last set of hypotheses in the present study.

Unfortunately, methodological problems prevented a full analysis of these relationships. Since subjects were randomly assigned to treatment groups, it was not possible to use standard criterion to divide them into groups of masculine, feminine, and androgynous such that each treatment group (SH, DH, NH, C) had several subjects in each classification. As it happened, for example, in the male DH group only one subject was highly femininely identified, and in the male NH group only one was highly masculinely identified. Thus, in these cells no variance could be calculated and, consequently, it was impossible to use the sex role score as an independent variable in a three way analysis of variance with sex and treatment effects on

ability and persistence. However, two way analyses between sex role identity and sex, and sex role identity and experience with helplessness, did not yield significance.

Correlations between sex role identity and ability and persistence measures suggested that feminine sex role identification was associated with mean response latency. Thus, feminine identified females were more passive in their attempts to seek solutions. This interpretation is supported by a trend for the number of new anagrams requested. The more femininely identified women requested fewer new problems. While these correlations ignore the treatment group to which the subjects were assigned and thus combine the sex role identity effect with the effect of the interactions of sex role identity with amount of experience with helplessness, as noted earlier, all Fs for these interactions were less than 1.00, indicating minimal interaction effects. At the very least, the correlations support the validity of the use of such hypotheses in future research. As reported earlier, no significant relations were found for males. One might have expected an association between masculine identification and number of requests for new anagrams and trial on which the first request came.

It may be that sex role identity would interact with sex of subject and treatment group if improvements were made in the induction of reactance and helplessness effects

and if subjects were counterbalanced on sex role identity before assignment to treatment group.

Implications for Future Theory and Research

Despite the general lack of significant differences between groups on their mean ability and persistence scores, data from the questionnaires and from the correlations suggested that there are relationships between sex and sex role identity and the way in which subjects are affected by and cope with uncontrollable outcomes. The results of this research, together with those found by others (Glass et al., 1972; Roth et al., 1974; Roth et al., 1975; Thorton et al., 1972) support the need for further experimental validation of the reactance-learned helplessness theory.

Methodological changes in the design of this experiment might offer an opportunity for a more clear understanding of the relationship between sex, sex role identify and reactance and learned helplessness. Specifically, the pretraining with helplessness should consist of either more anagrams or fewer solvable problems to insure that the treatments are aversive enough to affect learning and persistence, as well as to provoke an emotional reaction. Perhaps a set of 20 anagrams, 16 of which were insolvable for the Double Helplessness condition and 8 in the Single Helplessness group, would produce a more pronounced effect.

A second improvement would be to make the test set of anagrams slightly easier than the pretraining set. However,

care should be taken not to make the pretraining set so difficult as to be aversive in the solvable form for subjects in the NH condition.

The third change in the design would be to limit the amount of feedback subjects receive by offering no verbalization after the subject responds, but simply recording his response and the ability and persistence scores. Reducing relevant feedback should facilitate reactance and helplessness.

Finally, in order to assess the degree to which sex role identity affects acceptance of helplessness and attempts at mastery, subjects should be counterbalanced such that each treatment group contains equal numbers of masculine, feminine, and androgynous identified individuals. Through the use of a counterbalanced design, sex role identity could be treated as an independent variable and a three way analysis of variance between amount of experience with no control, sex, and sex role identity calculated. It may be that a significant three way interaction will emerge as hypothesized.

In addition to pursuing research on this specific aspect of reactance-learned helplessness, there are a number of other laboratory studies to which this model of depression lends itself. It would be interesting to study people in situations in which the outcomes are controllable, but may not appear to be, or in which the outcomes are not

controllable, but appear to be in order to assess how expectation of control influences behavior. It will also be important to conduct more studies in which the effects of expectations for control, importance of outcome, and experience with helplessness are systematically manipulated. In this area as well as measuring learning deficits and passivity on cognitive tasks, a fruitful approach might be to examine how these variables affect social behaviors such as assertiveness or needs for affiliation. A study begging to be conducted is one in which repeated measures of cognitive ability and persistence are taken at varying time intervals since helplessness training. Such a study might clarify the contribution neurotransmitters make to depression. One last suggestion for a laboratory study would be to examine how uncontrollable positive outcomes such as being rewarded with money or praise affects behavior.

Aside from the laboratory studies all of which are limited in terms of their generalizability to real life, an obvious area for research is the study of how individuals respond to naturally occurring uncontrollable outcomes. Longitudinal studies of accident victims, crime victims, and mourners should yield a wealth of material about the process of coping, an area which experimental studies cannot well address.

It is likely that at some point in the not too distant future the contribution catecholamines or other

biochemical neurotransmitters make to depressive affect, cognition, and behavior will be elucidated. The relationship between environmental, intrapsychic, and biochemical factors is an area which will be crucially important to investigate. It seems likely that these factors intereact to produce depression as well as causally with each other. Delineating the nature of these relationships may permit more successful use of drugs and psychotherapy in the treatment of depression.

The study of reactance and learned helplessness holds many implications for the diagnosis and treatment of depression. Seligman (1974) has suggested that if the perception of lack of control in one situation does result in the individual behaving as if he cannot exert control in another situation in which control is entirely possible, then we must "immunize" people against learned helplessness. By this he means to repeatedly demonstrate that they can affect outcomes in their lives. Wortman et al., (1975) argue against immunization therapy since they wisely suggest that there do exist situations over which individuals have little or no control, such as losing a person to whom one is close through death or not being hired for a much desired job. Instead, Wortman and Brehm suggest that therapists would be more helpful if they taught people how to discriminate when they do and when they do not have control and how to cope with both types of situations.

If loss of self-esteem does serve a signal function as Bibring proposed, then psychotherapists should help their patients interrupt the depressive cycle by encouraging them to mobilize their resources before they become depressed.

Given that all of the theories of depression discussed, psychodynamic, cognitive, and behavioral, place a great emphasis upon the effect past experience has on present behavior, it seems appropriate that therapists also invest time and energy on working to prevent the occurrence of aversive outcomes such as separations, divorces, suicides, and murders in the lives of children. While one cannot hope to eliminate all possible painful realities, nor would it necessarily be desirable to do so, an effort could certainly be made to reduce the number of uncontrollable aversive events in the lives of children and to promote social competence and coping in children. Such preventative measures would reduce the likelihood of inappropriate generalizations from earlier experiences to later ones.

And, if in fact, sex and sex role identity do influence how people respond to situations in which they have no control, then another task for mental health professionals may be to help broaden the behavioral repertoire of individuals who are highly sex typed so they will have better coping mechanisms available. The development of the ability to tolerate feelings of helplessness and of

the ability to seek mastery in other areas should help prevent loss of self-esteem or depression.

SUMMARY

The effects of small, large, and no amounts of experience with helplessness on measures of ability and persistence on an anagram problem solving task were studied in an attempt to seek experimental validation for the reactance-learned helplessness model of depression. Differences between males and females were examined as well as the effect of sex role identity as measured by Bem's Sex Role Inventory.

Eighty male and female college undergraduates were randomly assigned to one of four treatment groups, Single Helplessness (SH), Double Helplessness (DH), No Helplessness (NH), and Control (C). Subjects in the SH and DH conditions received either 5 or 10 insolvable anagrams out of a set of 15. The NH subjects received all solvable anagrams and C subjects received no pretraining. All subjects were tested on a set of 20 solvable anagrams in a set pattern. Attributions for success and failure as well as ratings of mood were gathered on all subjects.

Results indicated no significant differences between groups of mean ability and persistence scores. However, a positive association emerged between the amount of experience with helplessness and the number of trials to learn the anagram pattern. A trend for number of anagrams correct prior to learning the pattern also emerged. Sex of

subject had a significant effect upon mean response latency, a persistence measure. Females spent less time seeking solutions. A trend for number of anagrams correct before learning the pattern suggested that males learned the pattern in fewer trials. Correlations between sex and ability and persistence measures suggested that scores of persistence decreased more with helplessness experience for males, while for females, scores of ability were more adversely affected. Sex role identity was not related to measures of reactance and learned helplessness for males, but for females the more feminine identified they were, the longer they spent seeking anagram solutions and the fewer requests they made for new problems.

Data from questionnaires supported predictions made by the reactance-learned helplessness model. Experience with uncontrollable outcomes generally resulted in feelings of lack of control, incompetence, frustration, stress, and depression.

The results were discussed in terms of issues raised in the learned helplessness literature as well as by the combined reactance-learned helplessness model of depression. The importance of sex and sex role identity were examined as they relate to the ability to tolerate feelings of helplessness and to seek active solutions in situations where the outcomes are uncontrollable. Implications for future theory and research were discussed and suggestions were

made for the treatment of depression based upon the findings of this study.

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REFERENCE NOTE

Wortman, C.B. Personal communication, March 2, 1977.

APPENDIX A

Pearson Product Moment Correlations Betweeen Ability, Persistence and Sex Role Measures

	Ability			Persistence		
	Number correct	Trials to criterion	Correct before criterion	Mean response latency	Trial anagram requested	Number of requests
Number Correct						
Trials to criterion	.12					
Correct before criterion	.34[b]	.91[b]				
Mean response latency	-.39[b]	- .08	- .14			
Trial anagram requested	.01	.00	- .03	.19		
Number of requests	- .65[b]	- .07	- .22[a]	- .37[b]	- .18	
Sex role t score	- .04	.06	.04	.06	.00	- .01

[a] $p < .05$

[b] $p < .01$

APPROVAL SHEET

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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

6/29/77
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