SELF-EFFICACY EXPECTANCIES, OUTCOME EXPECTANCIES, 
AND SYMPTOMS OF DEPRESSION: A TEST 
OF CAUSAL RELATIONSHIPS 

by 
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An experiment was conducted to test the predictions made by self-efficacy theory regarding the etiology of depressive symptoms. The experiment also was designed to allow comparison of the predictions made by self-efficacy theory with those made by the revised learned helplessness model of depression.

Two levels of self-efficacy expectancy (high and low) and two levels of outcome expectancy (high and low) were induced experimentally. The effects of these manipulations on the following variables were assessed: (1) performance, as measured by persistence at an unsolvable problem; (2) level of self-esteem; (3) level of self-reported depressed mood; and (4) degree of apathy. Subjects were 40 female undergraduates enrolled in introductory psychology who received course credit for their participation.

Results failed to support completely the predictions made by either self-efficacy theory or the revised learned helplessness model of depression. Self-efficacy expectancy had a significant effect on self-reported apathy for an anticipated task (a set of geometric design problems), with subjects in the low self-efficacy expectancy condition expressing greater apathy (less interest, less concern) for attempting to solve the anticipated problems than subjects in the high self-efficacy expectancy condition. No other significant effects were found. Correlational analyses indicated that self-
efficacy expectancy was a significant predictor of apathy for the task, general feelings of apathy, and self-esteem.

Findings of the current research are limited by uncertainties regarding the effects of the following: (1) the interaction of subject gender and type of task used, (2) subjects' pre-experimental vulnerability to various mood states, and (3) subjects' perceptions of the abilities of others to perform the anticipated task. The impact of these variables should be addressed in future research.
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CHAPTER I

INTRODUCTION

Depression, the most common diagnosis in psychiatry and clinical psychology (Goodwin & Guze, 1984), has been investigated from numerous theoretical perspectives. In recent years, cognitive approaches have dominated the literature and have generated vast amounts of empirical research. Despite this prevalent cognitive orientation, however, many well-known theories of depression, such as Beck's cognitive model (1967, 1976) and the revised learned helplessness model (Abramson, Seligman, & Teasdale, 1978), have received only modest empirical support. As Coyne and Gotlib (1983) have indicated, the data are inconsistent and alternative explanations exist for the results reported. Thus, investigation of the nature and etiology of depression from a cognitive viewpoint remains an important topic for research.

One recent theory that holds promise for increasing understanding of depression is self-efficacy theory (Bandura, 1977, 1982, 1986). (See Appendix A for a general review of self-efficacy theory and research.) Self-efficacy theory maintains that psychological and behavioral change occurs as a result of changes in self-efficacy expectancies, expectations about one's ability to perform a certain behavior, and outcome expectancies, expectations about the probable consequences or outcomes of that behavior. Bandura (1982, 1986) has
proposed a relationship between self-efficacy expectancies, outcome expectancies, and symptoms of depression. The present paper reviews the proposed relationship and related empirical work. The paper also discusses the relationship between predictions about the etiology of depressive symptoms made by self-efficacy theory with those proposed by the revised learned helplessness model of depression (Abramson et al., 1978). Previous empirical work has provided some support for Bandura's (1982, 1986) predictions, but methodological flaws in the manipulation of self-efficacy expectancy and outcome expectancy make it difficult to draw firm conclusions from this research. An experiment was conducted to correct these methodological problems in order to compare directly predictions made by self-efficacy theory and the revised learned helplessness theory.

Self-Efficacy Theory and Depression

The original statement of self-efficacy theory (Bandura, 1977) predicted that both low self-efficacy expectancies and low outcome expectancies can lead to lack of persistence at a task and feelings of futility, both of which may be considered common depressive symptoms. In particular, individuals are likely to give up trying to perform a given behavior if they question their abilities to perform the behavior (low self-efficacy expectancy) or if they believe that the behavior is unlikely to influence the environment in a desired way (low outcome expectancy).

A recent refinement of self-efficacy theory (Bandura, 1982) provided more detailed predictions about the relationship between self-efficacy expectancies, outcome expectancies, and symptoms of
depression (see Table 1). In making these predictions, Bandura (1982) assumes that an expected outcome is valued highly. Given that an outcome is valued highly, depression is predicted to occur under conditions of low self-efficacy expectancy and high outcome expectancy. Specifically, when individuals perceive themselves as incapable of performing a certain behavior (low self-efficacy expectancy), but believe that highly desired outcomes would be obtainable through performance of that behavior (high outcome expectancy), they will display performance deficits (e.g., lack of behavioral initiative and persistence), self-devaluation, and depressed affect or despondency.

Bandura (1982, 1986) differentiates this self-denigrating, despondent condition from one in which a person perceives personal inefficacy under conditions of low outcome expectancy. Again, performance deficits are expected to accompany personal inefficacy. However, under conditions of low outcome expectancy, one perceives the environment to be unresponsive to the behavior of self and others concerning the achievement of a particular desired outcome. Given these conditions, a person will experience apathy and resignation since no behavior on that individual's or anyone else's part is likely to change the environment. Although apathy and resignation can be considered symptoms of depression, other important depressive symptoms such as self-devaluation and despondency are not predicted to result because people experiencing conditions of low self-efficacy expectancy and low outcome expectancy do not view themselves as deficient or defective relative to other people.
<table>
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<th>Self-Efficacy Expectancy</th>
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<td>High</td>
<td>Social Activism, Protest, Grievance, Millieu Change</td>
<td>Assured, opportune action</td>
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<td>Low</td>
<td>Resignation, Apathy</td>
<td>Self-devaluation, Despondency</td>
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NOTE: Table taken from Bandura (1982, p. 140).
Self-Efficacy and Learned Helplessness Theory

The learned helplessness model of depression, originally proposed by Seligman (1974), suggested that depressive responses occur when individuals learn that they are unable to control aversive outcomes. A reformulation of the original model (Abramson et al., 1978) focuses on the attributional components of depressive reactions to uncontrollability. Of particular concern are the attributions people make about the controllability of past and present negative events. Abramson et al. (1978) assert that uncontrollable negative events can be attributed to causes which are stable or unstable, global or specific, and internal or external. The nature of attributions made determines whether or not individuals will experience depressive symptoms following negative events. Recent reviews of the literature (e.g., Brewin, 1985; Peterson, Villanova, & Raps, 1985) have suggested that modest empirical support exists for the validity of the revised learned helplessness model.

The revised learned helplessness model of depression distinguishes between two types of helplessness: (1) personal helplessness, the perception that one is uniquely deficient in the ability to control specific outcomes; and (2) universal helplessness, the belief that no one is able to control the outcome in question. Both personal and universal helplessness can be viewed in terms of self-efficacy.

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1A complete review of the empirical literature that examines the validity of the revised learned helplessness model of depression is beyond the scope of the present paper, but is addressed fully by other sources (e.g., Brewin, 1985; Peterson et al., 1985).
expectancies and outcome expectancies. Personal helplessness is a combination of low self-efficacy expectancy and high outcome expectancy. The personally helpless individual believes that certain behaviors might or will lead to desired outcomes, that other people are capable of performing these behaviors, but that he or she is unable to do what most others seem able to do and, thus, is unable to obtain what most others can obtain. Both self-efficacy theory and the learned helplessness model predict that this combination of beliefs will lead to performance deficits, depressive affect, and lowered self-esteem.

Universal helplessness occurs, however, under conditions of perceived personal inefficacy and low outcome expectancy. Such a state, in which both self and others are incapable of producing desired outcomes, would be identified by the learned helplessness model as universal helplessness. An experience of universal helplessness is expected to result in passivity, negative cognitive set, and sadness, but is not expected to result in lowered self-esteem (Abramson et al., 1978). As discussed above, self-efficacy theory predicts that performance deficits and apathy, but not self-devaluation, will occur under conditions of perceived personal inefficacy and low outcome expectancy. Thus, both theories predict that this combination of beliefs will lead to performance deficits (passivity), but will not create feelings of self-devaluation (lowered self-esteem). The theories differ, however, with regard to the mood states expected to exist under these conditions. Whereas the learned helplessness model predicts the occurrence of a sad or depressed affect, self-
efficacy theory predicts the existence of an apathetic condition which may be characterized by a lack of emotion and disinterest rather than by the existence of depressive emotions such as sadness or loneliness.

Review of Previous Research

At least three studies have examined the relationship between self-efficacy expectancies, outcome expectancies, and symptoms of depression via correlational analyses. Kanfer and Zeiss (1983) reported that depressed college students [as measured by the Beck Depression Inventory (BDI; Beck, 1967)] reported lower self-efficacy expectancies than did nondepressed college students for various behaviors at home, work, school, and in social settings. These results confirm a portion of the predictions of self-efficacy theory, but Kanfer and Zeiss (1983) did not assess subjects' outcome expectancies for the various behaviors of interest. Thus, support for the validity of Bandura's (1982) predictions is limited.

Devins, Binik, Gorman, Dattell, McCloskey, Oscar, and Briggs (1982) correlated self-efficacy expectancy and outcome expectancy ratings with scores on the Beck Depression Inventory and self-esteem ratings in end-stage renal disease patients. These researchers found that low self-efficacy expectancies and low outcome expectancies independently predicted increased depression and lowered self-esteem. These results appear to support Bandura's (1977) earlier hypotheses rather than the later predictions (Bandura, 1982) since the interaction between self-efficacy and outcome expectancy was nonsignificant. Devins et al. (1982), however, used global, rather than behaviorally specific, self-efficacy and outcome expectancy measures.
In particular, a general self-efficacy rating was created by summing subjects' perceptions of control across numerous broad life dimensions (e.g., work, recreation, social relations, community and civic activities). Also, a general outcome expectancy rating consisted of subjects' general perception of locus of control [e.g., Internal-External Locus of Control (Rotter, 1966)]. The majority of research in self-efficacy theory emphasizes, however, the importance of employing measures specific to a particular behavior under consideration.

Rosenbaum and Hadari (1985) investigated the relationship of self-efficacy expectancies and outcome expectancies to depression and paranoia. They found that low personal efficacy characterized both paranoid and depressed psychiatric patients and distinguished them from normal persons. They also found that differences in outcome expectancies distinguished paranoid from depressed patients, with paranoid persons perceiving outcomes to be under the control of powerful others and depressed persons perceiving outcomes to be controlled by chance. Again, however, perceptions of both personal efficacy and outcome expectancy were assessed using global, rather than behaviorally specific measures. Self-efficacy expectancy was measured using an internal locus of control scale (Levenson, 1973), and outcome expectancy was assessed with a global Contingency of Rewards and Punishments Questionnaire (Yates, Kennelly, & Cox, 1975).

Although these correlational studies are informative, they provide no information regarding causality. Other studies, however, have addressed the causal relationship between self-efficacy expectancy and/or outcome expectancy and symptoms of depression. Stanley
and Maddux (1985), for example, demonstrated that experimentally induced changes in self-efficacy expectancies for an anticipated social interaction significantly influenced mood, with low self-efficacy expectancies creating greater depressed mood than high self-efficacy expectancies. A second experiment showed, however, that induced mood (depressed or elated) had no effect on subjects' ratings of self-efficacy expectancies for the anticipated interaction. These results suggest that the causal relationship between self-efficacy expectancy and depressed mood occurs in only one direction. However, it is likely that a stronger change in depressed mood is required before self-efficacy expectancies for social skills would be influenced. This suggestion is supported by research by Kavanagh and Bower (1985). This study induced sad and happy moods via hypnosis and found that the different moods produced differences in self-efficacy expectancies in several behavioral domains. Specifically, hypnotized subjects were asked to recall experiences of romantic success and failure in order to induce happy and sad moods. While experiencing one of these mood states, subjects were asked to rate self-efficacy expectancies for romantic behaviors, social skills and assertiveness, and athletic and other physical activities. Results indicated that induction of a sad mood created lower average self-efficacy expectancy ratings (across all behavioral domains) than induction of a happy mood.

Davis and Yates (1982) attempted a more thorough investigation of Bandura's (1982, 1986) hypotheses. They attempted to induce self-efficacy expectancies and outcome expectancies in order to examine
their effects on performance deficits and depressive affect. Both performance deficits (on anagram tasks) and depressive affect [as measured by the Depression Adjective Checklist (DACL; Lubin, 1967)] occurred only when self-efficacy expectancy was low and outcome expectancy was high. These results occurred only for male subjects. Davis and Yates (1982) concluded that their results supported Bandura's predictions and did not support the predictions made by revised learned helplessness theory.

Two major problems exist with the Davis and Yates (1982) study. First, outcome expectancy was manipulated incorrectly. Outcome expectancy was induced by showing subjects graphs which indicated either that most students solved the anagrams to be presented or that few students solved the anagrams. This manipulation, however, is a self-efficacy expectancy manipulation because it varied subjects' expectations about their own abilities (via comparison to others) to solve the anagrams rather than leading subjects to believe that certain outcomes would or would not occur as a result of their behavior. Second, the self-efficacy expectancy manipulation was at least partially ineffective for female subjects. In at least one condition (low self-efficacy expectancy, high outcome expectancy), female subjects failed to change their self-efficacy expectancy ratings from their original, midscale values following the manipulations. Thus, Davis and Yates' (1982) conclusion that depression occurs only under conditions of low self-efficacy expectancy and high outcome expectancy is tentative.
Bloom, Yates, and Brosvic (1985) further examined the previous finding that females were less susceptible than males to the depressive effects of self-efficacy expectancy and outcome expectancy manipulations. These researchers replicated this particular effect, reporting that males exhibited greater performance deficits (on anagram tasks) and greater depressed affect (as measured by the DACL) than females when self-efficacy expectancy was low and outcome expectancy was high. These results are somewhat more useful than those discussed by Davis and Yates (1982), since the self-efficacy expectancy manipulation in Bloom et al. (1985) was effective for female subjects. However, the outcome expectancy manipulation in Bloom et al. (1985) was the same as in Davis and Yates (1982) and, likewise, was questionable. Further, since all subjects received only low self-efficacy and high outcome expectancy manipulations, the study allows only for a comparison between males and females under that condition. It does not provide comparisons between degree of depressive symptoms under that condition and depressive symptoms evident under different conditions.

One final study examined the effects of induced self-efficacy expectancies and outcome expectancies on performance. Jacobs, Prentice-Dunn, and Rogers (1984) found independent effects for both self-efficacy expectancy and outcome expectancy on degree of persistence at an unsolvable design problem, with high levels of each creating greater persistence. These results appear to support Bandura's earlier predictions (1977) rather than the more recent, interactive predictions (Bandura, 1982, 1986), although the
relationship to depression is limited since Jacobs et al. (1984) did not assess depressive affect or degree of self-esteem.

Statement of Current Research:
Problem and Hypotheses

Each of the studies reviewed above provides some support for the predictions of self-efficacy theory regarding the etiology of depression. However, none of the studies provides conclusive evidence. In the present work, an experiment was conducted to test more fully the predictions made by self-efficacy theory regarding the etiology of depressive symptoms. The experiment also was designed to allow comparison of the predictions made by self-efficacy theory with those made by the revised learned helplessness model of depression (Abramson et al., 1978). Two levels of self-efficacy expectancy (high and low) and two levels of outcome expectancy (high and low) were induced experimentally. The effects of these manipulations on the following four variables were assessed: (1) performance, as measured by persistence at an unsolvable problem; (2) level of self-esteem; (3) level of self-reported depressed mood; and (4) degree of self-reported apathy.

It was expected that persistence at an unsolvable task would be weaker when self-efficacy expectancy was low than when self-efficacy expectancy was high (Abramson et al., 1978; Bandura, 1982). Persistence problems also were expected to occur when outcome expectancy was low (Bandura, 1977). Other predictions were directed primarily at the two low self-efficacy expectancy conditions due to the predicted impact of those conditions on depressed mood. Specifically, it was expected that under conditions of low self-efficacy expectancy,
greater self-devaluation (or lower self-esteem) would occur when outcome expectancy was high than when outcome expectancy was low (Abramson et al., 1978; Bandura, 1982). According to Bandura (1982, 1986), under conditions of low self-efficacy expectancy, apathy should be greater when outcome expectancy is low than when outcome expectancy is high. Also, degree of depressed mood should be greater when outcome expectancy is high than when outcome expectancy is low. According to Abramson et al. (1978), under conditions of low self-efficacy expectancy, degree of depressed mood should be similar when outcome expectancy is high or low. Subjects should experience a depressed, rather than an apathetic mood, under both of these conditions.

According to self-efficacy theory in general, self-efficacy expectancy should be the most significant predictor of mood and behavior measures. Optimally, self-efficacy expectancy and outcome expectancy should not correlate significantly, but theory (Bandura, 1984) and previous research (e.g., Manning & Wright, 1983; Stanley & Maddux, in press-a) suggests that a significant correlation is likely to occur.
CHAPTER II

METHOD

Design and Subjects

The experiment employed a 2 x 2 factorial design with two levels (high and low) of outcome expectancy and self-efficacy expectancy.

Subjects were 40 female undergraduates enrolled in introductory psychology who received course credit for their participation. They were assigned randomly to one of the four experimental groups such that each group contained an equal number of subjects. Only female subjects were used to control for gender differences. Seven additional subjects were omitted from the study because their scores on the Beck Depression Inventory (BDI; Beck, 1967) were 10 or higher, a cut-off score chosen to exclude individuals with signs of clinical depression.

Stimulus Materials

Subjects were told that they would be asked to work on a set of geometric design problems that comprised a bogus test called the Williams Geometric Design Test. The independent variables were manipulated via written communications regarding this test. In particular, the communications described the subject's ability to solve the geometric problems (self-efficacy expectancy), and the outcomes that the subject might expect from solving the set of geometric problems (outcome expectancy). The communications allegedly
were individualized computer print-outs based on data provided by the subject (e.g., age, sex, grade point average). (These communications appear in Appendix B.)

The self-efficacy expectancy manipulation focused on the subject's ability to solve the geometric design problems. The high self-efficacy expectancy communication indicated that the subject could expect to score in the 80th percentile due to her above average skills and that she could expect to solve the problems easily, accurately, and quickly. The low self-efficacy expectancy communication indicated that the subject could expect to score in the 20th percentile due to her below average skills and that she could not expect to solve the problems easily or quickly.

The outcome expectancy manipulation focused on the probability that certain consequences could be expected as a result of solving the geometric problems. Subjects were told they would take an intelligence test, called the Morgen Intelligence Test for Adults, following administration of the Design Test. The high outcome expectancy communication indicated that the subject could expect an increase of at least 15 IQ points on the intelligence test after solving the Design Test problems. Such an increase was 75 percent likely. The low outcome expectancy communication, on the other hand, indicated that there was only a 25 percent chance that the subject would improve her IQ score on the Morgen Intelligence Test by solving the Design Test problems.
Manipulation Checks were designed specifically for this experiment. Pilot research found these checks to be effective (see Appendix C). In both pilot work and the present study, subjects indicated their degree of agreement with various statements on seven-point rating scales, the endpoints of which were "strongly agree" and "strongly disagree." Items were scored so that higher numbers indicated stronger agreement.

A check on the success of the self-efficacy expectancy manipulation consisted of one questionnaire item which assessed each subject's expectations about her ability to solve the geometric problems ("It is highly likely that I will be able to solve the Williams Geometric Design Test problems easily and quickly"). A check on the success of the outcome expectancy manipulation consisted of one questionnaire item which concerned the subject's expectations regarding the effects that solving the geometric Design Test problems would have on her subsequent IQ score ["The probability is high that solving the Williams Geometric Design Test problems will lead to an increase in my IQ score (on the Morgen Intelligence Test) of up to 15 points"].

A check on the assumption that pre-manipulation outcome value was high and constant across groups consisted of subjects' responses to one questionnaire item. This item measured the degree to which subjects valued their performance on the Morgen Intelligence Test ("It is important for me to perform well on the Morgen Intelligence Test for Adults").
Mood and Self-Devaluation Assessment

Subjects' general depressed mood was assessed via responses to the Multiple Affect Adjective Check List (MAACL; Today Form, Zuckerman & Lubin, 1965). Measures of anxiety and hostility also were calculated from subjects' MAACL responses, and degree of self-devaluation was assessed via responses to the Rosenberg Self-Esteem Scale (RSEI; Rosenberg, 1965).

Apathy Assessment

Degree of apathy was assessed in three ways:

1. Apathy for performing the Design Test problems was measured by responses to four questionnaire items. These items asked subjects to rate how energetic, concerned, interested, and curious they were about trying to solve the Design Test problems. Ratings were based on seven-point scales, the endpoints of which were polar adjectives (e.g., "Indifferent . . . Very concerned"; "Not at all curious . . . Very curious"). Higher scores indicated greater apathy, and a single specific apathy score was created based on mean ratings for the four items, alpha coefficient = .87.

2. General feelings of apathy were assessed by subjects' responses to ten statements taken from R. S. Marin (personal communication, April, 1985) (e.g., "I am as interested in things as most people are"). Subjects indicated their degree of agreement with each statement on seven-point scales, the endpoints of which were "strongly agree" and "strongly disagree." Again, higher scores indicated
greater apathy, and a single general apathy score was created based on mean ratings for the ten items, alpha coefficient = .77.

3. A third measure of apathy involved possible devaluation of the expected outcome, performance on the Intelligence Test. Following administration of the experimental manipulations, subjects again were asked to rate the value placed on performing well on the Intelligence Test by indicating their degree of agreement with the statement, "It is important for me to perform well on the Morgen Intelligence Test for Adults." (See Appendix D for all questionnaire items assessing apathy.)

Persistence Assessment

Although subjects were told they would be asked to solve a set of geometric design problems, they actually were given only one unsolvable problem on which to work. This single geometric problem was identical to one used by Jacobs, Prentice-Dunn, and Rogers (1984) and by Carver, Blaney, and Scheier (1979). Each subject was given a sheet which included printed instructions, a sample problem, the correct solution, and two incorrect solutions. The instructions asked the subject to trace over all lines in the geometric designs to be presented without lifting the writing utensil from the paper and without tracing any line segment more than once. [Instructions and the sample problem shown were taken from Jacobs et al. (1984).] Persistence was assessed by measuring the amount of time subjects spent attempting solution of the unsolvable problem.
Procedure

Subjects were randomly assigned to conditions and were tested on an individual basis. Immediately after a subject was greeted and seated in the experimental room, she was asked to complete a Beck Depression Inventory (BDI; Beck, 1967) in order to assess her pre-experimental level of depression. The subject was told that the purpose of completing the BDI was to help one of the experimenter's colleagues who was trying to validate the questionnaire. Subjects were told that in order to carry out such a task, it was necessary for approximately 300 people to complete the questionnaire in order to calculate norms, and that the subject's help would be appreciated if she did not mind. All subjects agreed to help. After they completed the BDI, subjects were asked to provide demographic information which supposedly would be used in conjunction with validation of the scale. While subjects performed this task, the experimenter was able to score the BDI unobtrusively in order to allow elimination from the study of subjects who demonstrated any clinical level of depression.

If a subject's BDI score was 10 or higher (and, therefore, the subject was to be excluded from participation), she was told she would be participating in a study to update the norms for two standardized tests, the latter an IQ test. First, however, the subject was given another test that consisted of 12 easy anagrams. She was told she would have 30 minutes to solve the word problems. All subjects completed the anagrams in less than 30 minutes, were praised for their performance, and then were told they would not actually have to take an IQ test. Rather, the experimenter was interested in how
expectations about taking something as important to most people as an IQ test would have on performance of another task—would it make them perform more slowly or inaccurately? Subjects then were thanked for their participation and dismissed.

If a subject's BDI score was lower than 10, she was told that she would be participating in a study sponsored by a bogus organization called the National Testing Institute (NTI). The purpose of the study supposedly was to update the norms for two standardized tests. Subjects were told that the second test would be an intelligence test (called the Morgen Intelligence Test for Adults) and, as they probably already knew, scores on such tests were called IQ scores. Subjects were told that IQ scores are good predictors of general academic success and overall job performance and that it would be important for the subjects to do as well as they could on the intelligence test. Subjects were told that before taking the IQ test, however, they would have to take another test called the Williams Geometric Design Test. The nature of this test was not explained at this time. Before taking the Design Test, subjects were told they would be asked to complete some questionnaires provided by the NTI and required as part of the experimental procedure.

Each subject was told that the National Testing Institute had provided a computer program that could predict how well she would do on the first test, the Design Test, and whether or not her work with the Design problems would improve her IQ scores on the Intelligence test, a situation that did occur for some people. In order for the computer (located in an office across the hall) to make these
predictions, the subject was told that she would need to provide some demographic information (age, sex, approximate grade point average, SAT total score, year in school, and major) which the experimenter then would take across the hall and enter into the computer. The subject was told that a printout would be produced for her within five minutes, and the experimenter then would return to share it with the subject. On the sheet requesting the "necessary" demographic information was included the pre-experimental outcome value question, asking subjects to rate the importance of doing well on the IQ test. This question was embedded within other questions asking about the subject's previous experience with IQ testing in order to create a more plausible reason for including the question.

After the subject provided the demographic information, the experimenter left the room for five minutes, randomly assigned the subject to a condition, and returned with bogus feedback which included the appropriate experimental communications (see Appendix B). The experimenter read one copy of the feedback aloud as the subject read the other copy. Immediately following the experimental manipulations, the experimenter handed the subject a folder of questionnaires that she had been told she would be required to complete before any testing began. This folder included a sheet of instructions, the MAACL, the RSEI, and a questionnaire created for the study which included the three types of apathy items and the manipulation checks (see Appendix D).

After a subject completed the folder of questionnaires, the experimenter explained the nature of the Design Test by reading the
written instructions aloud. When the subject reported that she had no further questions about the procedure, she was given the "first" problem and tracing paper upon which to try her solutions. The subject was told to let the experimenter know when she was ready to begin the next problem. The experimenter immediately returned to her seat at a table behind the subject and started a stopwatch hidden from the subject's view. The subject was given only one design problem and the amount of time spent working on that problem was recorded. Subjects were asked to stop working after 30 minutes, if they had not stopped prior to that time.

Finally, each subject was given a blank paper on which to record any thoughts she had about the experiment. No subject reported any suspicion about the true purpose of the study. All subjects were debriefed fully and asked to carry out a modified version of the Velton (1968) elation-induction procedure in order to eradicate any temporary depressed mood created by the experimental manipulations. Subjects read the final 20 statements of the 60 statements used to induce an elated mood.
CHAPTER III

RESULTS

Pilot data which pretested the efficacy of the experimental manipulations and evaluated subjects' pre-experimental perceptions of outcome value are presented in Appendix C. As mentioned earlier, no subject in the present study had a BDI score of 10 or higher. The mean BDI score for all subjects was 3.08 and no significant differences existed among groups.

Manipulation Checks

Self-Efficacy Expectancy

The self-efficacy expectancy manipulation had a significant effect on self-efficacy expectancies in the predicted direction, $F(1,36) = 16.76, p < .0002$. Subjects in the high self-efficacy expectancy condition had stronger self-efficacy expectancies for their ability to solve the Design Test problems than did subjects in the low self-efficacy expectancy condition ($M_s = 5.1$ and 3.5). The self-efficacy expectancy measure also was influenced by the outcome expectancy manipulation, $F(1,36) = 4.19, p < .05$. Subjects in the high outcome expectancy condition had stronger self-efficacy expectancies than did subjects in the low outcome expectancy condition ($M_s = 4.7$ and 3.9).
Outcome Expectancy

The outcome expectancy manipulation had a significant effect on outcome expectancies in the predicted direction, $F(1,36) = 33.0$, $p < .0001$. Subjects in the high outcome expectancy condition had stronger outcome expectancies for the effects of solving the Design Test problems than did subjects in the low outcome expectancy condition ($M_s = 5.1$ and 3.5). The outcome expectancy measure also was influenced slightly by the self-efficacy expectancy manipulation, $F(1,36) = 3.67$, $p < .07$. Subjects in the high self-efficacy expectancy condition had slightly higher expectancies than did subjects in the low self-efficacy expectancy condition ($M_s = 4.6$ and 4.0).

Outcome Value

All subjects indicated that performing well on the IQ test was important to them (overall mean = 5.3 on a seven-point scale). As expected, no significant differences among groups were found.

Dependent Measures

Mood and Self-Devaluation Assessment

Contrary to predictions, covariance analyses of MAACL depression scores, using initial BDI scores as the covariate, indicated that experimental manipulations had no significant effects on depressed mood. There was, however, a trend for subjects in the high outcome expectancy condition to report more depressed mood than subjects in the low outcome expectancy condition, $F(1,36) = 2.86$, $p < .10$. ($M_s$ adjusted for covariate = 12.3 and 9.0). Analysis of variance
indicated that experimental manipulations had no effect on MAACL anxiety or hostility scores, as expected.

Mean scores of subjects' self-esteem ratings are presented in Table 2. Analyses of variance on RSEI scores indicated a trend toward a significant interaction, $F(1,36) = 2.86, p < .10$. Further analysis of this interaction indicated that under conditions of low outcome expectancy, the low self-efficacy expectancy manipulation led to greater self-devaluation (lower self-esteem ratings) than the high self-efficacy expectancy manipulation, $t(36) = 2.27, p < .025$. Also, under conditions of low self-efficacy expectancy, there was a tendency for subjects in the low outcome expectancy condition to report lower self-esteem than subjects in the high outcome expectancy condition, $t(36) = 1.34, p < .10$.

**Apathy Assessment**

Analysis of variance on the specific apathy measure indicated a significant effect of self-efficacy expectancy, $F(1,36) = 7.96, p < .008$. Subjects in the low self-efficacy expectancy condition expressed greater apathy (e.g., less interest, less curiosity) for trying to solve the Design Test problems than did subjects in the high self-efficacy expectancy condition ($M_s = 3.5$ and $2.6$). No other significant effects were found.

Analyses of the general apathy measure indicated no significant effects of the experimental manipulations. Covariance analyses of the post-experimental outcome value scores, using the pre-experimental outcome value scores as a covariate, indicated no differences between
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NOTE: Higher scores indicate a greater degree of self-esteem.
groups. Following the manipulations, all subjects continued to rate performing well on the IQ test as important (overall mean = 5.4).

**Persistence Assessment**

Analyses of variance indicated that the experimental manipulations had no effect on the length of time subjects worked on the unsolvable geometric design problem. The average persistence time for all subjects was 993.35 seconds (or 16.6 minutes).

**Correlational Analyses**

Correlational analyses indicated that self-efficacy expectancy correlated significantly with outcome expectancy ($r = .51, p < .0007$), RSEI self-esteem ratings ($r = .44, p < .004$), specific apathy ($r = -.41, p < .009$), and general apathy ($r = -.41, p < .008$). In addition, outcome expectancy correlated significantly with RSEI self-esteem rating ($r = .33, p < .04$).

Hierarchical multiple regression analyses (Cohen & Cohen, 1975) indicated that self-efficacy expectancy was a significant predictor of self-esteem ($R^2 = .20, p < .004$), specific apathy ($R^2 = .17, p < .009$), and general apathy ($R^2 = .17, p < .008$). Outcome expectancy added no predictability. No other significant results were found.
CHAPTER IV
DISCUSSION

The present study was designed to test the predictions made by self-efficacy theory (Bandura, 1977, 1982, 1986) regarding the etiology of various symptoms of depression. The study also was designed to compare the predictions made by self-efficacy theory with those made by the revised learned helplessness model of depression (Abramson et al., 1978). Results failed to support completely the predictions made by either theory.

Results indicated that self-efficacy expectancy had a significant influence on subjects' self-reported apathy for performing a geometric design task. Specifically, subjects told they were likely to have difficulty solving the problems on the anticipated task, due to below average skills, reported less interest in and less concern for attempting solution of the problems than subjects told that their skills for solving the problems were well above average. In accordance with self-efficacy theory, correlational results indicated that self-efficacy expectancy was a significant predictor of apathy for performing the anticipated task and of general apathetic mood. Self-efficacy expectancy also was a significant predictor of subjects' ratings of self-esteem. Despite its successful manipulation, outcome expectancy failed to add predictability.
Further results indicated a tendency for outcome expectancy to influence depressed mood, with higher levels of outcome expectancy creating greater depressed mood. This tendency is contradictory to both self-efficacy theory and the revised learned helplessness model. Also contradictory to both theories is the notion that self-esteem tended to be lowest under conditions of low self-efficacy expectancy and low outcome expectancy. This result suggests an additive influence of both variables on self-devaluation, although one must be wary of overinterpretation of trends in the data.

Despite the fact that the pattern of self-esteem ratings did not support either self-efficacy theory or the revised learned helplessness model completely, self-efficacy expectancy was a significant predictor of self-esteem. Such a result is in accordance with self-efficacy theory and replicates previous findings (Devins et al., 1982).

Both self-efficacy theory and the revised learned helplessness model predicted that persistence problems would occur under conditions of low self-efficacy expectancy. This prediction was not supported by the present work, although other investigators have found that both low self-efficacy expectancy and low outcome expectancy created persistence problems on the same geometric task used in the present study (Jacobs et al., 1984). Two major differences between Jacobs et al. and the present work may explain the dissimilar pattern of results in the two studies.

First, self-efficacy expectancy manipulations used in Jacobs et al. and in the present work were discrepant. In both experiments,
subjects were led to believe that they would or would not be able to solve the anticipated problems easily. However, wording of the manipulations, and possibly their psychological impact, varied. In Jacobs et al., self-efficacy expectancy was manipulated by telling subjects that 90 percent of others who had tried the anticipated task were or were not able to solve the problems easily; the experimenter further stated that the subject similarly would or would not be able to solve the problems. This communication implicitly states that the subject will be expected to perform at a level similar to the majority of others who have attempted the task. On the other hand, in the present experiment, self-efficacy expectancy was manipulated by telling subjects that they were expected to perform much better or quite a bit worse than others who had attempted the task (i.e., their scores would fall in the 80th or 20th percentile). This communication conveys the notion that the subject is expected to perform differently than the majority of others who have worked on the problems. Thus, in the present study, subjects in the low self-efficacy expectancy condition probably experienced a feeling of personal inefficacy relative to others (i.e., they expected to perform poorly, but also believed that others were capable of solving the problems). This situation may have led subjects in the low self-efficacy expectancy condition to try harder in order to attain what others might be able to attain or to prove that the "feedback" they received describing their expected performance was incorrect. On the other hand, subjects in Jacobs et al. who received the low self-efficacy expectancy manipulation probably experienced a different type of personal inefficacy
that one might call a "universal low self-efficacy expectancy" (see Stanley & Maddux, in press-b). Since subjects' perceptions of personal inefficacy were accompanied by beliefs that others also were incapable of solving the problems, subjects in the low self-efficacy expectancy condition may have felt that it was useless to work on the problem for a long time. Subjects in Jacobs et al. probably felt no need to persist in attempting to solve a difficult problem that virtually no one else could solve.

Also, social comparison theory (Festinger, 1954) suggests that individuals evaluate their abilities by comparing their performance with that of similar others. Social comparison with others who perform significantly better or worse does not help one to learn a great deal about his or her abilities. Research has shown that individuals may discontinue performing a behavior if inappropriate comparison others exist (Dreyer, 1954). Thus, in the present experiment, although comparison others were described as similar to the subject with regard to age, sex, etc. (see Appendix B), it may be that subjects perceived the abilities of comparison others to be too dissimilar to their own and, therefore, all subjects discontinued performance early.

This analysis seems to suggest that an important aspect of self-efficacy theory has been overlooked in at least some of the empirical literature. Bandura (1977) argued that modifications in self-efficacy expectancies can be influenced strongly by contextual factors. One important contextual factor certainly seems to be an individual's perception of his or her own abilities relative to the
perceived abilities of others. For example, if an individual expects to have difficulty solving a problem, but also believes that others would have similar difficulty (as in Jacobs et al., 1984), it may be psychologically "safe" to "give up" since in this case poor performance could be attributed to task difficulty rather than to lack of personal ability. If this type of attribution occurs, self-efficacy expectancy actually may not have been modified. On the other hand, if an individual expects to have difficulty performing a task, but believes that others would not experience similar difficulty (as in the present experiment), he or she may be more likely to exert more effort in the hopes of avoiding the expected attribution of poor performance.

Self-efficacy expectancies, by definition, involve attributions of ability. Thus, manipulations of self-efficacy expectancy should be designed to alter percepts of personal ability rather than beliefs about task difficulty. The relationship between attempts to alter self-efficacy expectancies and the resultant attributional activity of subjects should be examined more carefully in future self-efficacy research.

A second difference between Jacobs et al. and the present work involves gender of the subjects. Jacobs et al. reported only that 96 undergraduate subjects participated in their experiment; they did not indicate the number of males and females in their sample. The present experiment, however, included only female subjects in order to control
for gender effects and because females are more susceptible to experiencing depressive symptoms (Goodwin & Guze, 1984). Females' persistence with a difficult problem, however, may be influenced less than the persistence of males by experimental manipulations such as those used in Jacobs et al. and the present work. Support for this idea is provided by Davis and Yates (1982) who reported that males, but not females, exhibited persistence deficits on a difficult anagram task under conditions of low self-efficacy expectancy and high outcome expectancy. Performing well on analytical written problems, such as the geometric design problem used in the present study or the anagram task used by Davis and Yates (1982), may be more important to males than to females. Traditional notions of sex-roles suggest that males value highly their analytical skills whereas females value highly their social skills. If such differential values exist in the populations studied, variable persistence effects might be found if females were given a task oriented toward social interaction (see discussion below for further evidence that social interaction tasks may produce different results for females). This notion is merely speculative, however, since in the present work, no rating was obtained regarding subjects' perception of the importance of doing well on the geometric task. Although female subjects did report that performing well on the anticipated intelligence task was important to them, they may have felt that performing well on a geometric task was unimportant. Such an argument could explain failure of the experimental manipulations to produce the expected persistence effects. Further empirical work would be needed to verify this hypothesis.
Other results of the present work indicate that the experimental manipulations failed to have a significant impact on subjects' level of depressed mood. Previous work, however, has shown that self-efficacy expectancies and/or outcome expectancies can influence degree of depressed mood (Davis & Yates, 1982; Stanley & Maddux, 1985). Two major differences between previous research and the present experiment may suggest reasons for the lack of significant results in the present study.

First, as noted above, an interaction of subject gender and type of task may be important. Davis and Yates (1982) failed to find that females reported depressed mood under conditions of low self-efficacy expectancy and high outcome expectancy. Stanley and Maddux (1985), however, did find that level of depressed mood in female subjects was influenced significantly by induced self-efficacy expectancies. Whereas Davis and Yates manipulated self-efficacy expectancy by providing feedback regarding subjects' abilities to perform an anticipated anagram task, Stanley and Maddux manipulated self-efficacy expectancy by providing feedback regarding subjects' abilities to perform an anticipated social interaction task. As mentioned above, social interaction tasks may be more highly valued by females than written, analytical tasks such as solving anagrams. Likewise, social interaction tasks may be more important to female subjects than the geometric design task used in the present study. The anagram and geometric design tasks, however, may be valued more highly by male subjects who did exhibit the predicted depressed mood reactions in Davis and Yates. Future research to test these hypotheses should
include two modified versions of the present experiment: (1) the experiment should be repeated with male subjects, using the exact procedure as reported in the present paper; and (2) the experiment should be repeated with female subjects, using a similar procedure but changing the anticipated task from a geometric design puzzle to a social interaction task.

A second major difference between the present and previous research that may account for the lack of significant differences in depressed mood involves subjects' initial level of depression. In the present study, subjects who scored a ten or higher on the Beck Depression Inventory prior to participation in the experiment were excluded. This criterion excluded all subjects who demonstrated any level of clinical depression and resulted in a very low mean Beck Depression score (3.08). Thus, subjects in the present experiment were experiencing very few, if any, depressive symptoms and they may have been resistant to experience of depressed mood. Davis and Yates (1982), on the other hand, did not report the use of any exclusionary criteria and, therefore, their sample may have exhibited greater pre-experimental levels of depression and less resistance to changes in depressed mood. Although it is possible that the sample in the present study was too resistant to experiencing depressed mood, data from Stanley and Maddux (1985) indicate that such an explanation is not sufficient. Although Stanley and Maddux excluded subjects with Beck Depression scores greater than 15 (rather than ten, as in the present study), mean BDI scores were still quite low (3.9 in Experiment I; 4.1 in Experiment II) and changes in depressed mood did occur.
Thus, failure to find significant changes in depressed mood in the present study cannot be explained by pre-experimental levels of depression alone.

Although subjects in the current experiment did not experience changes in depressed mood, they did become apathetic about the anticipated task when told they probably would not perform well. In the present experiment, an apathetic state was more pervasive than predicted by Bandura (1982). This type of reaction may have been related to the notion that female subjects initially did not value highly performing well on the geometric task. If subjects did not value the task initially, apathy may have been a more appropriate emotional response following induction of low self-efficacy expectancy than depressed mood. Also, despite the argument above, it still is possible that apathy is a more common emotional reaction to low self-efficacy expectancy than depressed mood for subjects who show no signs of clinical depression and are resistant to depressed mood states. Further research should address the influences of type of task and pre-experimental level of depression. Self-efficacy theory may need to incorporate a variable which describes an individual's current "mental health state" or vulnerability for the experience of various mood states.

Based on results of the current work in combination with analyses of previous work, there appear to be three major avenues that future research should take. First, research should examine the influence of self-efficacy expectancy manipulations that systematically vary perceptions about one's ability relative to beliefs about others'
abilities. Attributions made based on self-efficacy expectancy manipulations also should be examined carefully. Second, investigation regarding gender effects and nature of the task will be important to further investigation of the relationship between self-efficacy expectancy, outcome expectancy, and symptoms of depression. Finally, empirical work should examine more closely the interaction of subjects' pre-experimental mood states and the impact of self-efficacy expectancy and outcome expectancy variables.
REFERENCES


APPENDIX A

SELF-EFFICACY THEORY: A REVIEW OF THEORY AND RESEARCH
Self-efficacy theory (Bandura, 1977, 1982) suggests that psychological and behavioral change occurs as a result of changes in self-efficacy expectancies, expectations about one's ability to perform a certain behavior, and outcome expectancies, expectations about the probable consequences or outcomes of that behavior. The theory maintains that self-efficacy expectancies are more influential in determining behavior change than are outcome expectancies. Specifically, it is suggested that self-efficacy expectancies determine what behaviors will be initiated, how much effort will be expended in a chosen behavior, and how long a person will persist in a chosen behavior in the face of difficulties. If it is important to distinguish self-efficacy expectancies from outcome expectancies since a person may fail to perform a behavior that is expected to lead to positive outcomes if the person doubts his or her ability to perform the behavior. Bandura maintains that if outcome expectancies and self-efficacy expectancies are not congruent (either both positive or both negative), self-efficacy expectancies will serve as the primary determinant of behavior.

Self-efficacy expectancies can arise from four sources: (1) physiological arousal, (2) verbal persuasion, (3) vicarious experience, and (4) past performance (Bandura, 1977). For example, individuals' expectations about their abilities to perform certain behaviors can be influenced by how calm or nervous they feel in particular situations (physiological arousal), by what others have told them regarding their abilities to perform the behaviors (verbal persuasion), by observations made regarding the performance of others
in similar situations (vicarious experience), and by how well the individuals have performed similar behaviors in the past (past performance). Bandura (1977) suggests that past performance is by far the strongest source of influence on self-efficacy expectancies.

Self-efficacy expectancies vary along a number of dimensions that determine their influence on behavior (Bandura, 1977). For example, self-efficacy expectancies can represent the perception of ability to perform in a very specific situation or they can represent a more global perception of ability to perform in a variety of situations. Thus, self-efficacy expectancies vary in generality. They also vary in strength; perceptions of one's ability to behave in certain ways can be extremely strong and resistant to change or they can be weak and easily altered by disconfirming experiences. Lastly, self-efficacy expectancies vary in magnitude. Self-perceptions of ability can be limited to very simple steps in a behavioral hierarchy or they can extend to moderately or extremely difficult tasks. Bandura suggests that an adequate assessment of self-efficacy expectancies requires measurement of all of these dimensions.

Empirical Investigations: General Applications of Self-Efficacy Theory

Self-efficacy theory was originally developed to examine therapeutic change in fearful and avoidant behavior. Thus, the initial studies carried out by Bandura and his colleagues (Bandura & Adams, 1977; Bandura, Adams, & Beyer, 1977; Bandura, Adams, Hardy, & Howells, 1980) focused on the relationship between changes in self-efficacy expectancies and changes in the avoidance behavior and fear arousal of
phobic subjects. Examination of this relationship occurred through what is called a microanalytic methodology (Bandura, 1977).

Microanalytic methodology permits an examination of the degree of congruence between behavior on a specific task and perception of one's ability to perform that task. Specifically, subjects are asked to rate their ability to perform a number of behaviors that vary in difficulty, complexity, or some other dimension. This dimension depends on the domain of functioning being examined. Subjects are asked to indicate which behaviors they perceive themselves to be capable of performing and the degree of certainty with which they can make that judgment. Subjects then are provided with some type of treatment designed to reduce pretest measures of avoidance behavior and fear arousal. Self-efficacy judgments are made by subjects at three points throughout the experiment: (1) immediately after a behavioral pretest, (2) following treatment but prior to a behavioral posttest, and (3) following the behavioral posttest. Correlational analyses then are conducted and a congruence measure is calculated. The congruence measure is obtained by computing the percentage of accurate correspondence between self-efficacy judgments and actual performance. More specifically, any positive judgment of self-efficacy (e.g., yes, I can perform behavior X) that is given a confidence rating of 20 or above is defined as a self-judged capability. Any instance in which subjects judge themselves capable of performing a behavior and then perform that behavior successfully or judge themselves incapable and then fail to perform the behavior constitutes congruence. Similar congruence measures are obtained using
performance attainments during treatment as predictors. Any instance in which treatment behavior and posttest behavior are equivalent (both successfully performed or both failed) constitutes congruence.

Bandura and his colleagues have used the microanalytic research strategy to examine the cognitive and behavioral changes that accompany various treatments provided for snake phobics. Substantial increases in self-efficacy judgments have been shown to accompany behavioral improvements following various types of treatment. Specifically, congruence levels between self-efficacy judgments and behavioral performance are high regardless of whether treatment consists of cognitive modeling (congruence = 81%, Bandura et al., 1977), vicarious performance (congruence = 86%, Bandura et al., 1980), or enactive mastery experiences (congruence = 89%, Bandura et al., 1980). The fact that the highest congruence rates occurred following enactive mastery experiences provides support for Bandura's (1977) notion that past performance is the source of strongest influence on expectations of self-efficacy.

Although past performance seems to have the strongest impact on self-efficacy judgments, self-efficacy expectations appear to be more powerful predictors of behavior than do past performance accomplishments. In their second experiment, designed to generalize self-efficacy findings with snake phobics to a group of agoraphobics, Bandura et al. (1980) found that the discrepancy between subjects' behavior during treatment and their behavior at posttest (26%) was significantly greater than the discrepancy between self-efficacy judgments and posttest behavior (10%).
Since the time of these investigations regarding the relationship between self-efficacy judgments and changes in phobic behavior, other investigations have examined the general relationship between self-efficacy expectancy and behavior change. For example, increases in self-efficacy expectancy have been found to accompany post-treatment improvements in social skills and assertiveness (Kazdin, 1979; Kazdin, 1982; Lee, 1984), reductions in smoking behavior (Conditotte & Lichtenstein, 1981), ability to tolerate pain (Manning & Wright, 1983; Tan & Poser, 1982), and existence of positive weight status following treatment for obesity (Hartigan, Baker-Strauch, & Morris, 1982). Self-efficacy judgments also appear to be more significant predictors of ability to maintain post-treatment behavior change than do past performance accomplishments. For example, Di Clemente (1981) found that maintenance of smoking cessation at 5-month follow-up was correlated significantly with post-treatment judgments of self-efficacy, but did not correlate with any demographic or smoking history variable. Namely, "maintainers" had significantly higher self-efficacy scores than did "recidivists." McIntyre, Lichtenstein, and Mermelstein (1983) also reported that post-treatment self-efficacy scores correlated significantly with smoking status at 3-month and 6-month follow-up assessments, although a significant correlation no longer existed at a 1-year follow-up.

Further studies have indicated that perceptions of self-efficacy correlate significantly with achievement strivings (Bandura & Schunk, 1981), career choice and development (Betz & Hackett, 1981), self-reports of speech anxiety (Lane & Borkovec, 1984), and tennis
performance (Barling & Abel, 1983). Thus, it appears that self-efficacy judgments are functionally related to a wide variety of behaviors.

Despite the apparent pervasive applicability of self-efficacy theory, it is important to note that all of the literature reviewed above is correlational in nature. Although correlational work is informative, these studies do not address Bandura's (1977) position that self-efficacy expectancies are a primary determinant of behavior. Some attempts have been made to examine the causal relationship between self-efficacy expectancies and behavior change.

Bandura, Reese, and Adams (1982) induced differential levels of self-efficacy expectancies (low, medium, and high) in snake and spider phobics via treatments involving enactive mastery or vicarious modeling. Between-group and within-group comparisons indicated significant correlations between self-efficacy expectancies and performance accomplishments. For subjects who received enactive mastery treatment, congruence between efficacy judgments and posttest performance was significantly higher than was congruence between performance during treatment and posttest performance (86%, 73%, respectively).

Other experimental work has been conducted by Maddux and his colleagues (Maddux, Norton, & Stoltenberg, in press; Maddux & Rogers, 1983; Maddux, Sherer, & Rogers, 1982; Stanley & Maddux, in press-a) to examine the causal relationship between self-efficacy expectancies and intentions to change behavior. These researchers have manipulated self-efficacy expectancies via written communications and have found that self-efficacy is a powerful predictor of intentions to stop
smoking (Maddux & Rogers, 1983), intentions to behave more assertively (Maddux et al., in press), and intentions to sign-up for and participate in an exercise program (Stanley & Maddux, in press-a).

General Theoretical Problems

Two major theoretical problems exist in the self-efficacy literature. Namely, difficulties exist with the conceptual distinction between self-efficacy expectancy and outcome expectancy. Also, there is a tendency for theoreticians and researchers in this area to omit consideration of a third important cognitive variable, outcome value.

The primary theoretical criticism of Bandura's (1977) conceptual distinction between self-efficacy expectancies has been that self-efficacy expectancies were defined in such a way that expectations of outcome were included in the definition (Kazdin, 1978; Teasdale, 1978). Specifically, criticism has focused on the following phrase: "(self-efficacy is) the conviction that one can successfully execute the behavior to produce the outcomes" (Bandura, 1977, p. 193). Both Kazdin (1978) and Teasdale (1978) indicate that this statement makes it difficult to differentiate self-efficacy judgments from the perceived outcomes of a given behavior. Bandura (1978) has replied to these criticisms by indicating that the word "successfully" referred to the execution of a behavior and not to the outcome of that behavior. He further indicated that the phrase "required to produce the outcomes" was added to identify the behavior upon which the outcome depended, not to indicate that outcome was part of the concept of personal efficacy.
Kazdin (1978) and Teasdale (1978) accept the notion that there is a logical and theoretical distinction between self-efficacy and outcome expectancy; however, they suggest that it may be impossible to make an empirical distinction between the two concepts. If this is true, the usefulness of the concepts for the understanding of behavior is limited. Bandura (1983, 1984) does agree that an empirical distinction between self-efficacy expectancy and outcome expectancy will be difficult to obtain. Specifically, although the two concepts are distinct, they will correlate empirically because self-efficacy expectancies exert a strong influence on outcome expectancies. This position implies that empirical support for the notion of independence between the concepts will be difficult, if not impossible, to obtain.

More recent theoretical criticism appears to recycle old ideas. Specifically, Eastman and Marzillier (1984) suggest that regardless of Bandura's proposed conceptual distinction between self-efficacy judgments and outcome expectancies, the two still appear to be related intimately and impossible to differentiate. It seems that the answer to these "recycled" criticisms lies in empirical work (reviewed below in section entitled "General Empirical Problems") which examines the relationship between self-efficacy expectancy and outcome expectancy.

A second theoretical criticism of self-efficacy theory concerns its omission of consideration of outcome value, the reinforcement value of an expected outcome. Teasdale (1978) has suggested that inclusion of an outcome value construct in self-efficacy theory would be useful. Maddux et al. (in press), in an empirical investigation, found that integrating outcome value with self-efficacy theory was
useful for improving attempts to explain and predict behavior. Although inclusion of such a variable will be useful, caution must be taken to examine the conceptual distinctions between outcome value and outcome expectancy.

**General Empirical Problems**

A number of empirical problems exist in the self-efficacy literature. First, the majority of empirical work has been correlational. Second, problems exist with the validity of the types of measurement used to assess the level and strength of self-efficacy expectancies. Third, difficulties exist with regard to the ability of researchers to assess the independent influences of self-efficacy expectancies and outcome expectancies on behavior. In many cases (e.g., Lee, 1984; Maddux & Rogers, 1983; Manning & Wright, 1983), self-efficacy expectancy and outcome expectancy are not assessed and/or manipulated independently.

First, the majority of work on the relationship between self-efficacy expectancies and behavior change has been correlational in nature. The pervasiveness with which personal efficacy has been shown to correlate significantly with behavior change is compelling, but these correlational studies fail to examine the causal relationship between self-efficacy judgments and behavior.

Second, criticisms have been made concerning the methods used to determine the level and strength of self-efficacy expectancies. For example, Eastman and Marzillier (1984) have argued that the congruence measure used by Bandura and his colleagues is nothing more than a percentage rating of subjects' ability to predict their future
behavior. These authors argue that the close relationship between self-efficacy ratings and post-treatment performance reported by Bandura and his colleagues is to be expected given that subjects are predicting their ability to perform the same behaviors that they have performed earlier during a pretest and, in some cases, during enactive treatment. Bandura (1984) counters this criticism by arguing that the predictability of self-efficacy percepts is stronger than that of performance during enactive treatment. This argument indicates that prediction of future behavior is influenced by more than just past performance, but it does not address directly whether or not self-efficacy expectancy is equivalent to predicting future behavior.

Eastman and Marzillier (1984) also suggest that by dichotomizing self-efficacy judgments, unrealistically high concordance rates are achieved. For example, if subjects judge themselves capable of performing a task in the middle of the behavioral hierarchy, they also will judge themselves capable of performing each behavior that is below that task in the hierarchy. Bandura (1984) counters this argument by suggesting that the dichotomizing of self-efficacy judgments can lead to high discordance rates as easily as it can lead to high concordance rates if subjects misjudge their capabilities to perform a specific behavior. Bandura (1984) also suggests that more refined analyses, which do not dichotomize self-efficacy judgments, indicate that the degree of strength of self-efficacy judgments also is correlated highly with successful post-treatment performance. The issue here seems to lie in whether or not other methods of assessment provide equally strong support for the tenets of self-efficacy theory.
One further problem exists with the methods used to assess self-efficacy judgments. Kirsch (1982) has argued that self-efficacy ratings of ability to perform fearful behaviors are no more than measures of subjects' willingness to perform those behaviors. This argument is based upon empirical work which indicated that self-efficacy expectancies of snake-phobic subjects could be altered easily by offering subjects monetary incentives to perform feared behaviors. Kirsch (1982) found that the same monetary incentives did not change subjects' percepts of their abilities to perform a task that required them to toss a wad of paper into a wastebasket from various distances, a task defined by Kirsch (1982) as a "skill-task." Thus, Kirsch (1982) concluded that snake-phobics' self-efficacy expectancies for approaching and/or handling snakes was not a measure of their perceived ability to perform the feared behaviors, but rather a rating of their willingness to engage in those behaviors. If this notion is correct, the basic tenets of self-efficacy theory have received only modest empirical support.

Bandura (1983) counters this argument by suggesting that Kirsch's (1982) conclusion begs the question. Kirsch (1982) explains that snake phobics are unwilling to perform certain behaviors due to fear of certain outcomes. Bandura (1983) maintains that expectations of consequences, which Kirsch (1982) suggests lead to fear and unwillingness, depend upon judgments of ability to perform in a given situation. In other words, Bandura (1983) theorizes that self-efficacy expectancies determine outcome expectancies, and thus are the primary determinants of fear to behave. It seems that Bandura's (1983) reply
also begs the question of whether self-efficacy expectancies are equivalent to willingness to behave.

Finally, other empirical criticisms relate to the theoretical problem of the conceptual distinction between self-efficacy expectancies and outcome expectancies. As there are difficulties with the conceptual distinction, there are difficulties with the empirical distinction between the concepts. Much self-efficacy research has not manipulated and/or assessed self-efficacy expectancy and outcome expectancy independently. Research that has assessed both self-efficacy expectancy and outcome expectancy (e.g., Barling & Abel, 1983; Beck & Lund, 1982; Lee, 1984; Manning & Wright, 1983) generally has found self-efficacy to be the superior predictor of behavior. This conclusion is speculative, however, in light of the problems that exist with the items used to assess the two types of expectancies.

Manning and Wright (1983) report that self-efficacy expectancy was the best predictor of pain medication use in childbirth. The predictability of self-efficacy expectancy was superior to that of outcome expectancy and eight other predictors (e.g., value of the outcome, locus of control, amount of practice with pain-reducing techniques). However, the assessment of self-efficacy in Manning and Wright's (1983) work appears to be inaccurate. Specifically, self-efficacy expectancy was measured by asking subjects to indicate their anticipated ability to control labor and delivery pain without the use of medication. This measure does not refer to subjects' ability to perform some behavior or set of behaviors, but rather refers to the outcome of those behaviors and thus is no more than an additional
outcome expectancy measure. This hypothesis is supported somewhat by Manning and Wright's (1983) report that self-efficacy measures and outcome expectancy measures were highly correlated ($r = .75$). Thus, the two types of expectancies were not assessed independently and, therefore, any conclusion about their relative predictability is impossible. A more appropriate item to assess self-efficacy expectancy would have been to ask subjects to rate their ability to avoid taking pain medication.

Lee (1984) concluded that self-efficacy expectancies are superior to outcome expectancies in predicting assertive behavior. However, Lee's (1984) measure of outcome expectancy dealt with the value associated with a specific outcome (outcome value) rather than with the outcomes expected to occur as a result of performing some behavior. Her measure of outcome expectancy asked subjects to rate how positive or negative various outcomes would be following assertive responses in various situations. This measure assessed outcome value or importance rather than assessing what specific outcomes were expected to follow "assertive" behaviors. Thus, conclusions about relative predictability of self-efficacy expectancy and outcome expectancy cannot be drawn.

In addition to these problems that exist with regard to the measurement of self-efficacy expectancies and outcome expectancies, some problems exist with regard to the manipulation of these variables in studies that have attempted to examine the causal relationship between self-efficacy judgments, outcome expectancies, and behavior (or behavioral intentions). Specifically, Maddux and Rogers (1983)
assessed the impact of experimentally-induced self-efficacy expectancies and outcome expectancies on intentions to stop smoking. These researchers reported that self-efficacy was superior to outcome expectancy in predictability. However, the fact that an interaction between self-efficacy expectancy and outcome expectancy occurred on the self-efficacy expectancy manipulation check item indicates that these two expectancies were not manipulated independently. Stanley and Maddux (in press-a) also attempted to assess the unique and combined effects of experimentally-induced self-efficacy expectancies and outcome expectancies on subjects' intentions to sign-up for and participate in an exercise program. These researchers found that although self-efficacy expectancy was a significant predictor of behavioral intentions, outcome expectancy was the superior predictor of intentions. However, again these two concepts were not manipulated independently. Measures of self-efficacy expectancy and outcome expectancy were correlated positively and significantly ($r = .24$), although the magnitude of this correlation did not approach that reported by Manning and Wright (1983) ($r = .75$).

Despite these difficulties in assessment and experimental manipulation, Maddux et al. (in press) have provided evidence that self-efficacy expectancy and outcome expectancy can be manipulated and assessed independently. These researchers found that self-efficacy expectancy and outcome expectancy were both significant and roughly equivalent predictors of intentions to adopt an assertive behavior (the broken-record technique) ($r = .40$, $r = .39$). These conclusions appear to be more valid than those of previous research since
manipulation check items were worded carefully so that items assessing self-efficacy expectancy (e.g., "The broken-record technique would be difficult for me to learn.") and outcome expectancy (e.g., "For those who can use it, the broken-record technique is a very effective way to avoid giving in to other people.") did not correlate significantly ($r = .13$). These findings appear to support Bandura's (1977) notion that self-efficacy expectancy and outcome expectancy are independent concepts. The results do not support Bandura's (1983, 1984) contention that self-efficacy expectancies are a major determinant of outcome expectancies. Results of Maddux et al. (in press) also called into question Bandura's (1977, 1982, 1983) notion that self-efficacy expectancies are a primary determinant of behavior change since outcome expectancy, but not self-efficacy expectancy, had a significant main effect on behavioral intentions.
APPENDIX B

COMMUNICATIONS TO MANIPULATE SELF-EFFICACY
EXPECTANCY AND OUTCOME EXPECTANCY
The written communications used to manipulate self-efficacy expectancy and outcome expectancy were as follows:

1. **High Self-Efficacy Expectancy Communication**

   YOUR ABILITY TO PERFORM THE PROBLEMS ON THE WILLIAMS GEOMETRIC DESIGN TEST IS WELL ABOVE AVERAGE. RESEARCH BY WILLIAMS (1980) AND TURNER AND GUTHRIE (1981) HAS SHOWN THAT OTHER INDIVIDUALS OF THE SAME AGE AND SEX, AND WITH SIMILAR GPA'S AND SAT SCORES, SCORE IN THE 80TH PERCENTILE OF ALL STUDENTS WHO COMPLETE THE WILLIAMS GEOMETRIC DESIGN TEST. THEREFORE, IT IS EXPECTED THAT YOUR SCORE ON THE DESIGN TEST ALSO WILL FALL IN THE 80TH PERCENTILE. THIS MEANS THAT YOU WILL PERFORM BETTER ON THE TEST THAN 80% OF ALL OTHER PEOPLE WHO TAKE THE TEST. YOU HAVE THE ABOVE AVERAGE SKILLS REQUIRED FOR EXCEPTIONAL PERFORMANCE ON GEOMETRIC PROBLEMS SUCH AS THOSE INCLUDED ON THE DESIGN TEST AND YOU MOST LIKELY WILL SOLVE THOSE PROBLEMS EASILY, ACCURATELY, AND QUICKLY.

2. **Low Self-Efficacy Expectancy Communication**

   YOUR ABILITY TO PERFORM ON THE WILLIAMS GEOMETRIC DESIGN TEST IS WELL BELOW AVERAGE. RESEARCH BY WILLIAMS (1980) AND TURNER AND GUTHRIE (1981) HAS SHOWN THAT OTHER INDIVIDUALS OF THE SAME AGE AND SEX, AND WITH SIMILAR GPA'S AND SAT SCORES, SCORE IN THE 20TH PERCENTILE OF ALL STUDENTS WHO COMPLETED THE WILLIAMS GEOMETRIC DESIGN TEST. THEREFORE, IT IS EXPECTED THAT YOUR SCORE ON THE DESIGN TEST ALSO WILL FALL IN THE 20TH PERCENTILE. THIS MEANS THAT YOU WILL PERFORM BETTER THAN ONLY 20% OF ALL THE OTHER PEOPLE WHO TAKE THE TEST. YOU DO NOT HAVE THE SKILLS REQUIRED FOR AVERAGE PERFORMANCE ON GEOMETRIC PROBLEMS
3. High Outcome Expectancy Communication

Research by Fraser and Jones (1979) and Hartman (1980) has shown that for some individuals, experience with the Williams Geometric Design Test problems can lead to improved performance on the Morgen Intelligence Test for Adults. Some research subjects have been able to increase their IQ scores by an average of 15 points on the Morgen Intelligence Test for Adults after they first performed the problems on the Design Test. This degree of improvement occurred for 75% of the persons involved in these research projects who were of the same age and sex as you are and who had similar GPA's and SAT scores as you reported. Therefore, there is a 75% chance that you will be able to improve your IQ score by performing the Design Test problems prior to taking the Morgen Intelligence Test. An increase of approximately 15 points is highly likely. This increase is enough to move your IQ score from average to high average or from high average to superior.

4. Low Outcome Expectancy Communication

Research by Fraser and Jones (1979) and Hartman (1980) has shown that for some individuals, experience with the Williams Geometric Design Test problems can lead to improved performance on the Morgen Intelligence Test for Adults. Some research subjects have been able to increase their IQ scores by an average of 15 points on the Morgen Intelligence Test for Adults after they first performed the problems on the Design Test. However, this degree of improvement occurred for
ONLY 25% OF THE PERSONS INVOLVED IN THESE RESEARCH PROJECTS WHO WERE OF THE SAME AGE AND SEX AS YOU ARE AND WHO HAD SIMILAR GPA'S AND SAT SCORES AS YOU REPORTED. THEREFORE, THERE IS A 25% CHANCE THAT YOU WILL BE ABLE TO IMPROVE YOUR IQ SCORE BY PERFORMING THE DESIGN TEST PROBLEMS PRIOR TO TAKING THE MORGEN INTELLIGENCE TEST. AN INCREASE OF APPROXIMATELY 15 POINTS IS VERY UNLIKELY IN YOUR CASE, ALTHOUGH SUCH AN INCREASE WOULD BE ENOUGH TO MOVE YOUR IQ SCORE FROM AVERAGE TO HIGH AVERAGE OR FROM HIGH AVERAGE TO SUPERIOR.
APPENDIX C

SUMMARY OF PILOT RESEARCH
A pilot study was conducted using 12 female undergraduate subjects. Subjects were assigned randomly to one of the four experimental groups so that each group contained an equal number of subjects. These subjects were administered the same manipulations and test procedures reported in the text of the present paper. However, statistical analyses were conducted only on subjects' pre-experimental level of outcome value and on the two manipulation check items.

It was expected that all subjects would perceive performing well on the Morgen Intelligence Test to be important, and that no significant differences on this rating would occur among groups. It also was expected that the self-efficacy expectancy manipulation would have a significant effect on the self-efficacy expectancy manipulation check item ("It is highly likely that I will be able to solve the Williams Geometric Design Test problems easily and quickly.") and that the outcome expectancy manipulation would have a significant effect on the outcome expectancy manipulation check ("The probability is high that solving the Williams Geometric Design Test problems will lead to an increase in my IQ score (on the Morgen Intelligence Test) of up to 15 points.").

Results confirmed these predictions. All subjects indicated that performing well on the IQ test was important to them (overall mean = 6.1 on a seven-point scale), and no significant differences among groups were found. The self-efficacy expectancy manipulation had a significant effect on self-efficacy expectancies in the predicted direction, $F(1,11) = 5.40$, $p < .05$. Subjects in the high self-efficacy expectancy conditions had stronger self-efficacy expectancies
for their abilities to solve the Design Test problems than did sub-
jects in the low self-efficacy expectancy condition (Ms = 5.2 and
3.7). The outcome expectancy manipulation had a significant effect on
outcome expectancies in the predicted direction, F(1,11) = 12.25, p <
.008. Subjects in the high outcome expectancy condition had stronger
expectancies for the effects of solving the Design Test problems than
did subjects in the low outcome expectancy condition (Ms = 5.7 and
3.3). No other significant effects were found.
APPENDIX D

QUESTIONNAIRE CREATED FOR EXAMINATION OF APATHY RATINGS AND MANIPULATION EFFECTIVENESS
MSWE

1. I am as interested in things as most people are.

1 2 3 4 5 6 7
Strongly Disagree Neither agree nor disagree Strongly Agree

2. Nothing gets to me emotionally.

1 2 3 4 5 6 7
Strongly Disagree Neither agree nor disagree Strongly Agree

3. It takes a lot to get me interested in things.

1 2 3 4 5 6 7
Strongly Disagree Neither agree nor disagree Strongly Agree

4. Good times don't give me pleasure the way they do for others.

1 2 3 4 5 6 7
Strongly Disagree Neither agree nor disagree Strongly Agree

5. No matter what happens, I'm neither happy nor sad, just in-between.

1 2 3 4 5 6 7
Strongly Disagree Neither agree nor disagree Strongly Agree

6. I am always interested in learning new things.

1 2 3 4 5 6 7
Strongly Disagree Neither agree nor disagree Strongly Agree

7. I don't care about the things that other people care about.

1 2 3 4 5 6 7
Strongly Disagree Neither agree nor disagree Strongly Agree
8. I am just not interested in life as much as most people.

1 Strongly Disagree
2 Neither agree nor disagree
3 Strongly Agree

9. Disappointments don't bother me as much as they bother most people.

1 Strongly Disagree
2 Neither agree nor disagree
3 Strongly Agree

10. I am interested in having new experiences.

1 Strongly Disagree
2 Neither agree nor disagree
3 Strongly Agree

11. It is important for me to perform well on the Morgen Intelligence Test for Adults.

1 Strongly Disagree
2 Neither agree nor disagree
3 Strongly Agree

12. Think about how you are feeling about trying the Williams Geometric Design Test. This is the test you will be asked to take prior to the IQ test. You will be asked to take it immediately following completion of the forms in this folder. Using the following pairs of adjectives, rate how you feel about taking the Williams Geometric Design Test.

NOT AT ALL ENERGETIC
1 2 3 4 5 6 7

INDIFFERENT
1 2 3 4 5 6 7

NOT AT ALL INTERESTED
1 2 3 4 5 6 7

NOT AT ALL CURIOUS
1 2 3 4 5 6 7

13. It is highly likely that I will be able to solve the Williams Geometric Design Test problems easily and quickly.

1 Strongly Disagree
2 Neither agree nor disagree
3 Strongly Agree
14. The probability is high that solving the **Williams Geometric Design Test** problems will lead to an increase in my IQ scores (on the **Morgen Intelligence Test**) of up to 15 points.

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