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EVALUATING REACTIONS TO STRESS FOLLOWING A NATURALISTIC STRESSOR

by

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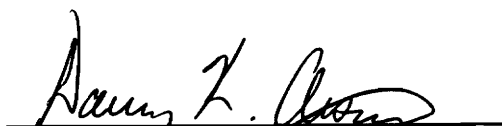in partial fulfillment of the requirements for the degree of

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(ABSTRACT)

This study examined problem-solving and causal
attributional styles as possible diatheses for depression,
hopelessness and suicidal ideation, given the onset of a
stressor. In order to evaluate the predictive validity of
these models, subjects were evaluated prospectively, before
the occurrance of a naturalistic stressor, namely a midterm
examination. Subjects were administered a modified version
of the Means-Ends Problem Solving Scale (Platt & Spivack,
1975) to evaluate their problem-solving ability on a
hypothetical task, the Problem Solving Inventory (Heppner,
1986) to evaluate perceived problem-solving ability, and the
Attributional Style Questionnaire (Peterson, et al., 1982)
to evaluate their causal attributional styles. The Life
Experience Survey (Sarason, et al., 1978) was administered
to evaluate other stressors in the subjects lives.
Hypotheses included: 1) actual problem-solving deficits,
2) percieved problem solving deficits, and 3) an internal,
stable and global causal attributional style will interact

with both measures of stress to predict depression, hopelessness and suicidal ideation. Results supported each of the hypotheses, though the diatheses differed in their predictive ability depending upon the measure of stress used or the criteria examined.

ACKNOWLEDGEMENTS

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The Diathesis/Stress Model

In attempting to identify valid etiological models of
depression, hopelessness, and suicidal ideation, an increas-
ing number of researchers have investigated diathesis-stress
models of these phenomena (Bonner & Rich, 1987, 1988; Clum,
Patsiokas & Luscomb, 1979; Metalsky, et al., 1982; Metalsky,
Halberstadt & Abramson, 1987; Schotte & Clum, 1982, 1987).
The basic premise of diathesis-stress models is that par-
ticular cognitive styles predispose individuals to difficul-
ties in coping (i.e. depression, hopelessness and suicidal
ideation), when they encounter life stress. Several differ-
ent cognitive diatheses (i.e. vulnerability factors) have
been identified as being possible pathways to depression,
hopelessness and suicidal ideation. Two of the most re-
searched are causal attributional styles and problem solving
deficits.

Particular causal attributional styles (e.g. attribut-
ing negative events to internal, stable and global factors)
have been linked to depression (Golin, Sweeney and Shaeffer,
1981; Metalsky, et al., 1982, Metalsky, Halberstadt &
Abramson, 1987) and have been theorized as a possible
diathesis to hopelessness and suicidal ideation (Abramson,
Metalsky & Alloy, 1989). Problem solving deficits, defined

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as cognitive rigidity and deficits in generating solutions to life's problems, have also been supported by several studies as possible predisposing factors to depression (Nezu, et al., 1986a; Nezu, et al., 1986b), hopelessness and suicidal ideation (Clum, Patsiokas & Luscomb, 1979; Schotte & Clum, 1982, 1987).

These models should be conceptualized as sufficient, not necessary, pathways to the specified psychological difficulties. The diatheses do not, in and of themselves, predispose an individual to difficulties in coping (Abramson, et al., 1978). Rather, when an individual with such a cognitive diathesis experiences a stressor, this individual should be more likely to develop depression, hopelessness or suicidal ideation, than an individual without such a diathesis.

One approach to establishing the predictive validity for diathesis-stress models is to first assess the cognitive diatheses prior to a stressor, then measure the stressor, and subsequently measure the resultant effects of the stressor and diatheses, if any. Several studies have been conducted thus far, which have used this procedure (Bonner & Rich, 1988; Follette & Jacobson, 1987; Metalsky, et al., 1982, Metalsky, Halberstadt & Abramson, 1987). This longitudinal model permits better inferences regarding causality than do concurrent models, which assess dependent and independent variables at the same time.

Few studies, however, besides those listed above have used this longitudinal approach. Further, most of the studies utilizing a longitudinal approach have tested only the causal attributional model, as forwarded by Abramson, et al., (1978). Such studies as these will be discussed later, after first presenting several studies which have attempted to concurrently validate a problem-solving diathesis.

Problem-solving deficits as a cognitive diathesis

The relationship between problem solving deficiencies and depression, hopelessness and suicidal ideation is well documented in the literature. Spirito, et al., (1989) found in a review of the literature regarding attempted suicide, that deficits in problem solving were one of three types of cognitive factors which appeared frequently in subgroups of suicidal ideators. Earlier research found significant differences between depressed and nondepressed individuals in such measures as number of anagrams solved correctly, completion time of given problems, and number of trials in completing anagram problems (Klien, Fencil-Morse & Seligman, 1976; Miller & Seligman, 1975). Neuringer (1964) found evidence which indicated that suicidal ideators were more cognitively rigid (as measured by the Rokeach Map Test) than non-ideating counterparts. He later postulated that suicidal individuals become hopeless due to their decreased ability to engage in effective problem solving (Neuringer, 1974),

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Several researchers have more directly tested the hypotheses that problem-solving deficits are associated with depression, hopelessness and suicidal ideation. Nezu, et al. (1986) assessed perceived problem-solving ability and life stress, using college students, to predict depression. They confirmed their hypothesis, finding that the interaction of life stress with perceived problem-solving effectiveness explained three times more of the variance than life stress alone. The finding that suicidal individuals exhibit markedly worse problem-solving skills, was supported when Schotte and Clum (1982) found that suicidal ideators were less able to generate relevant solutions to hypothetical problems, when under high life stress, compared to a control group of depressed, non-suicidal subjects. Later, Schotte & Clum (1987) generalized this finding to a group of suicidal psychiatric patients who were found to generate fewer alternative solutions to interpersonal problems than a group of hospitalized, non-suicidal patients.

Nezu et al. (1986), used the Problem Solving Inventory (PSI, Heppner & Petersen, 1986) as a measure of perceived problem-solving ability, while Schotte & Clum (1982, 1987) utilized a modified version of the Means-End Problem Solving Inventory (MEPS, Platt et al., 1975). The latter is an objective measure of problem-solving ability. These two measures were found to be uncorrelated in a comparative

analysis (Heppner & Petersen, 1982). Doefler, et al. (1984) has forwarded the hypothesis that measures of hypothetical problem solving (i.e. MEPS) and measures of personal appraisal of problem solving ability might assess different aspects of problem solving ability.

Doefler, et al. based their hypothesis on a model of problem solving posited by D'Zurilla and Goldfried (1971) which includes: orienting to situations, identifying the problem operationally, generating alternatives to the problem, evaluating and selecting alternatives and implementing the chosen alternative. The modified MEPS scale developed by Schotte and Clum, (1987) was hypothesized to elicit the following steps of D'Zurilla and Goldfried's model: identifying the problem, generating alternatives to the problem and evaluating and selecting alternatives. The PSI, in contrast, assesses the subjects' perception of confidence in utilizing each step in the model.

Gotlib and Asarnow (1979) support the use of the MEPS for both mildly and clinicially depressed individuals for assessing of problem solving deficits. They found that both of these groups were significantly less effective in their ability to conceptualize steps in solving a problem (i.e. "means-ends" problem solving) (Gotlib & Asarnow, 1979), which are deficits that can be measured with the MEPS scale.

Although the above studies have contributed greatly to our understanding of the relationship between problem

solving deficits and depression, hopelessness and suicidal ideation, none of the studies have used a longitudinal approach to evaluate their models. Rather, they have assessed the level of stress that the subjects have undergone concurrently with their measuring problem-solving ability, depression, hopelessness and suicidal ideation. This procedure complicates the interpretation of the results, such that it is impossible to determine whether depression, suicidal ideation and hopelessness lower problem-solving ablility, or problem-solving deficits lead to depression, hopelessness and suicidal ideation, or some third variable affecting both.

In addition, many of the studies utilize only a general measure of interpersonal problem solving in tasks which are not personally relevant to the subject. This approach is questionable, given Gotlib and Asarnow's (1979) conclusion that depressed and nondepressed subjects' performance is not significantly different on tasks which are not personally relevant to the subjects.

What is clearly needed, therefore, is a prospective test of the interaction of problem-solving ability and a stressor, and their relationship to depression, hopelessness and suicidal ideation. Another improvement would be to utilize the PSI as a measure of perceived problem solving ability as well as a modified version of the MEPS scale to assess both perceived and actual problem solving ability.

Lastly, it is important to make the hypothetical problem on the MEPS as personally relevant to the subjects as possible.

Attributional style as a cognitive diathesis

Another cognitive factor which Spirito, et al. (1989) found was frequently used to test the diathesis-stress model of suicidal behavior was cognitive distortions. A common type of cognitive distortion, which has been examined in the literature is that of causal attributional style, first assessed for its relationship to depressive symptomotology in the reformulated learned helplessness theory (Abramson, et al., 1978).

Causal attributional style originated from the revised Learned Helplessnes theory of depression, to help improve the theory by providing a mechanism to explain self esteem deficits which were commonly found in individuals with depressive symptomotology. The original Learned Helplessness theory originates from Overmeier and Seligman's (1967) study in which inescapable punishment was administered to animals, resulting in decreased physiological avoidance. The findings were soon generalized to humans as a possible analogue to human depression (Hiroto & Seligman, 1975). However, as mentioned above, the mere administration of an inescapable punisher alone failed to account for some cruicial aspects of the depressive constellation (i.e. self-esteem deficits). Abramson, Seligman and Teasdale (1978) reformulated the theory to include a cognitive component

which involved causal attributions of negative events. The new theory stated that depressed individuals should attribute the cause of negative events to internal, stable and global causes, and less importantly, positive events to external, unstable and specific causes (Abramson, et al, 1978). Without such an attributional pattern, negative events were considered insufficient to cause depressive symptomotology, and conversely, the attributional style, without a stressor, should be insufficient to cause depression. This theory was characterized by Metalsky, et al., (1982) as a diathesis-stress model, in an attempt to emphasize the contributory, rather than necessary, condition of the attributional diathesis in the development of depression.

The necessity of determining the temporal primacy of such a "depressogenic" causal attributional style, was recognized as being crucial to support the reformulation of the theory (Metalsky, et al., 1982). Several researchers attempted to support the model with cross-sectional studies of attributional style and depression (Blaney, et al., 1980; Seligman et al., 1979).

In an improvement on the cross-sectional approach, Golin, Sweeney & Shaeffer (1981) utilized a cross-lagged panel correlation analysis between attributional style and depressive symptomotology. They found that attributional style preceded, rather than followed, depressive

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symptomotolgy. The test was incomplete, however, because a
measure or manipulation of a stress condition was not
included in the study. Metalsky, et al., (1982, 1987)
conducted two studies which involved a prospective test of
the causal attributional hypothesis. In the first study,
attributional style was assessed prior to the onset of a
stressor (i.e. poor grade on a midterm examination). After
the stressor, a measure of depressed mood was given, and it
was found that internal and global causal attributions for
negative events correlated highly with depressive
symptomotology, when considered in interaction with a
stressor, but not without.

Although Metalsky, et al. were criticized on
methodological grounds in this first study (Williams, 1985),
the study was revised and conducted again (Metalsky, et al.,
1987). The findings from this study again supported the
predictions from the revised Learned Helplessness model.
High scores on the stable and global subscales of a modified
Attributional Style Questionnaire (ASQ, Peterson, et al,
(1982)) predicted enduring depressed mood, in interaction
with life stress (i.e poor grade on midterm examination). In
addition to the finding that enduring mood responses were
predicted by an attributional style x stress interaction,
they also found that immediate mood responses were predicted
by severity of the life stress alone (Metalsky, et al.,
1987).

Since there appeared to be only provisional support for the existing revised Learned Helplessness theory, the theory was again revised into the Hopelessness theory of depression (Abramson, Alloy & Metalsky, 1989) This new rendition views an internal, stable and global causal attributional pattern for negative events, when paired with a significant stressor, as a distal, sufficient cause of hopelessness depression (Abramson, et al., 1989). This formulation suggests that attributional style is only one of several possible pathways to depresssion, with such symptoms particular to this "subtype" of depression as hopelessness and suicidal ideation (Abramson, et al., 1989).

While the above studies by Metalsky, et al utilized a naturalistic stressor prospectively to provide predictive validity to their model, they failed to generalize their results to an actual measure of depression. In each of these studies, Metalsky, et al. used the Multiple Affect Adjective Checklist (MAACL; Zuckerman & Lubin, 1965) to obtain ratings of "transient levels of depressive mood". They chose this measure, as opposed to the Beck Depression Inventory (BDI) because they stated that some of the items on the BDI "assess more enduring depressive symptomotology" (Metalsky, et al., 1982). This limitation can be alleviated, however, by instructing the subjects to fill out the questionnaire relative to the time period of interest.

Neither hopelessness nor suicidal ideation were assessed in either of the Metalsky studies. Only recently (Abramson, et al., 1989) has the Learned Helplessness model been extended to include the prediction of these phenomena. Unlike many of the studies which have used a measure of life stress, such as the Life Experience Survey (LES; Sarason, et al., 1978), the Metalsky et al., studies do not include a measure of current life stress in the subjects. A possible improvement, therefore, would be to include such a measure (e.g. the LES) as well as to introduce a naturalistic stressor for assessing predictive validity. In this way, the effectiveness of using retrospective measures of stress, could be evaluated against a naturalistic stressor in predicting depression, hopelessness and suicidal ideation.

Bonner and Rich (1988) used a paradigm similar to the Metalsky, et al. studies, to develop predictive validity for their "stress-vulnerability" model developed in an earlier study (Bonner and Rich, 1987). In the more recent study, they found that vulnerability factors (i.e. irrational cognitions, loneliness, social/emotional alienation and low reasons for living) combined, but did not interact with life stress to predict suicidal ideation. One potential shortcoming to this study is that they used the subjective experience of midterm examinations as a stressor rather than a more objective measure such as poor grades on the exam.

Although the Bonner & Rich (1988) study uses the prospective paradigm to assess suicidal ideation, their "vulnerability factors" (Bonner & Rich, 1987) are not synonymous with the diatheses examined in our study. Bonner and Rich also neglected to assess hopelessness, which has been shown to be a crucial link between depression and suicidal ideation (Beck, Kovack & Weissman, 1975).

Two studies have examined the relationship between problem-solving ability and attributional style. In the first of these, Heppner, Baumgardner & Jackson (1985) examined this relationship and found that problem-solving appraisal (as measured by the PSI) was not significantly related to causal attributional style (as measured by the ASQ) in a linear fashion. Furthermore, they found that problem-solving abilities were more strongly correlated with depression than were causal attributional styles (Heppner, et al., 1985). Nezu, et al. (1986) hypothesized that problem-solving ability was a moderator variable between causal attributional style and depression. An interaction between an internal, stable and global causal attributional style and perceived problem solving ability predicted depression significantly. Though both of these studies attempted to examine the relationship between causal attributional style and problem solving deficits, neither of the studies included a measure of life stress. While limited evidence suggests that there is a moderating

relationship between problem solving and attributional style regarding depression, this relationship has not yet been generalized to hopelessness and suicidal ideation. Further, no support for causal links between the two diatheses can be inferred from these studies.

The possibility exists that at least three different relationships operate between problem solving and attributional style, as affecting hopelessness and suicidal ideation. First, problem solving deficits could precede attributional style changes in the etiology of these disorders. Second, attributional style changes could precede problem solving deficits. Finally, depressed mood, hopelessness and suicidal ideations could influence each other simultaneously, causing subsequent changes in each. Though this latter possibility appears to be the least likely scenario, given present research, (Golin, et al., 1981; Metalsky et al, 1982, 1987) such research has not focused on problem solving deficits in their analysis.

Hypotheses

In the present study, a prospective test of the diatheses from both the problem-solving model and the revised Learned Helplessness (hopelessness) model was conducted. The following hypotheses are forwarded: 1) Problem-solving deficits will interact with both existing life stress as measured by the LES (Sarason, et al., 1978) and a naturalistic stressor (exam grade) to predict levels

of depression, hopelessness and suicidal ideation, subsequent to the stressor. This is predicted from the model forwarded by Schotte & Clum (1982). 2) Deficits in perceived problem-solving ability (as measured by the PSI (Heppner, 1986) will interact with existing life stress and the naturalistic stressor to predict levels of depression, hopelessness and suicidal ideation.

Regarding the causal attributional diatheses, the following hypotheses are forwarded: 3) Higher scores on the internality, stability and globality subscales for negative events on the Attributional Style Questionnaire (Peterson, et al., 1982), will interact with life stress and the naturalistic stressor to predict higher levels of depression, hopelessness and suicidal ideation. 4) Higher scores on the internality, stability and globality subscales for positive events on the ASQ will interact with life stress to predict lower levels of depression, hopelessness and suicidal ideation, than individuals without such an attributional style.

METHOD

Subjects

Male and female college freshmen, who were enrolled in introductory psychology, were recruited through the introductory psychology pool at Virginia Polytechnic Institute and State University, under the announcement for a study concerning students' "reactions to stress". Subjects were recruited during both fall and spring terms, and were given four (4) extra credit points for their participation. A total of 339 subjects were recruited for this project (180 Fall term, 159 spring term). From this, 322 came to at least one of the assessment sessions and filled out at least a portion of the assessments. A group of 17 subjects failed to appear to their scheduled session and could not be reached to be rescheduled. 269 subjects completed all of the assessment measures, with the material from the remaining 53 subjects incomplete, incorrectly filled out, or lacking identifying information for analyses. The majority of these subjects, (n=21) failed to return for the second assessment period, and could not be reached or no longer wished to participate in the study. Subjects who did not complete the second assessment session were compared to the other subjects with a t test, comparing mean scores on each of the pre-exam criteria measures. No difference was found between the two groups (BDI t = 1.29, p = .2037; BHS t = .5631, p = .5759; MSSI t = .5013, p = .6183).

Procedure

After the potential subjects signed up to participate
for the study on evaluating reactions to stress, they were
screened to insure that they were all in introductory
psychology and were all freshmen who had not previously
taken introductory psychology. This was done in order to
increase the probability that a failed test would be
considered stressful.

The subjects were evaluated in sessions of 20-30 people
each. Subjects attended two sessions (one before the exam,
one afterward), each of which lasted approximately one and
three-quarters hours. The pre-exam sessions were held 6 to 8
days before the exam, and the post test assessments were
held from 2-8 days after the exam was administered.

Scores on the BDI, BHS and MSSI were compared between
Fall and Spring terms, using a two-tailed t test. No
significant differences were found. (BDI $t = .9720$, $p =
.3318$; BHS $t = .5685$, $p = .5701$; MSSI $t = .4481$, $p = .6544$)
Because subjects were evaluated from as little as 2 days
after the exam, to as many as 8 days after the exam,
correlations were computed between the number of days post
exam and scores on the BDI, BHS and MSSI. No significant
correlations were found. (BDI $r = -.098$, $p = .0837$; BHS $r =
-.044$, $p = .4355$; MSSI $r = -.062$, $p = .2745$)

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After the subjects were screened to insure their eligibility they were given instructions to fill out (in the order indicated): the consent form, the Beck Depression Scale, the Beck Hopelessness Scale, the Problem Solving Inventory, The Modified Scale for Suicidal Ideation, the Life Experience Survey, the Attributional Style Questionnaire and the modified Means-End Problem Solving Scale. The scales were administered in this order, because opscan sheets were used to record responses to the first four inventories, while direct recording of responses on the questionnaires were required for the remaining instruments.

In the post-exam assessments exam grades were posted in the group testing room, by student ID number, to insure that everyone knew their test score. All of the subjects were asked to code their test score (on a 5 point scale F = 5, D = 4, C = 3, B = 2, A = 1) on their opscan sheets. At the end of each assessment period, the scores on the BDI, BHS and MSSI were reviewed, and anyone with significantly elevated scores on any of these instruments (cutting scores: BDI = 6; BHS = 6; MSSI = 4) was contacted, briefly interviewed and given referrals for counseling. All subjects who were interested in the hypotheses of the study were informed of them after the post-exam session.

Criterion Measures

Beck Depression Inventory (BDI) (Beck, 1967) (Appendix E) This is a 21 item questionnaire which measures cognitive, somatic and behavioral indices of depression and is easily adapted to a self-report format. Each item is scored from 0 - 3, with higher scores indicating more serious depression; the range of scores is 0-63. The inventory shows good internal consistency (alpha coefficient = .86), and has been shown to have good construct validity within a university population (Oliver & Burkham, 1979).

Beck Hopelessness Scale (BHS) (Beck, et.al. 1974) (Appendix F) This is a 20 item scale which measures the extent of negative expectations regarding the future & pessimism. Items are in a true-false format, and are scored (1 or 0) in the positive direction. One half of the items are reversed. The range of possible scores is 0-20, with higher scores indicating higher levels of hopelessness. The BHS has been shown to have high levels of internal consistency (KR-20 = .93). Its predictive validity of eventual suicide, has been well documented (Beck, et al., 1985).

Modified Scale for Suicidal Ideation (MSSI) (Miller, et. al. 1986) (Appendix G) This 18 item instrument was modified from the Beck, Kovacs and Weissman (1979) inventory, for use as a self-report instrument to assess the extent of suicidal ideation and intent. Its scores have been

shown to be correlated with administered versions of the SSI, which has been shown to have have high internal consistency (KR-20 = .89), as well as satisfactory levels of concurrent, discriminant and construct validity (Beck, Kovacks & Weissman, 1979).

Predictor Measures

Attributional Style Questionnaire (ASQ) (Peterson, et.al. 1982) (Appendix B) This instrument is a self-report questionnaire which is easily adapted for group testing procedures. It measures the type of causal attributions a respondent makes for positive and negative events. It has good test-retest reliability ranging from r = .64 for positive events and r = .70 for negative events (for the composite scales), and has been shown to have good construct and predictive validity (Golin, et al., 1981, Seligman, et al., 1979). Internal, stable and global attributional scores for both positive and negative events, and composite attributional scores for positive and negative events were computed. The range of mean composite positive/negative scores is from 0 - 6.

Modified Means-End Problem Solving Scale - (MMEPS) (Appendix C) The MMEPS is a specially modified instrument to assess specific problem solving ability in this academic context. The adaptation of the MEPS used in the present study is similar to the original MEPS scale (Platt & Spivack, 1975), and to a scale developed by Schotte & Clum,

(1982, 1987) In the form used in the present study, the
presenting problem and outcome was furnished, as follows:
(problem) "You have failed your first introductory
psychology test"; (outcome) "You end up feeling OK about
your performance". From this instrument, several scores were
obtained. They include: number of relevant means, number of
irrelevant means, the average number of pros and cons for
each mean, and the average probability of success attributed
to each mean given. Schotte & Clum (1987) report that scores
on their version of the modified MEPS were found to
correlate significantly with scores on the original MEPS,
which has been shown to have good construct, discriminant,
content, predictive and concurrent validity (Platt, Scura &
Hannon, 1973; Platt & Siegal, 1975; Platt & Spivack, 1972,
1973). This inventory has also been shown to have acceptable
levels of test-retest reliability over 2 1/2 weeks (.59),
and high levels of internal consistency (KR 20 = .80 to
.82). The relevancy of solutions provided to the presented
problem requires a subjective judgement. Accordingly,
interrater reliability was computed. The investigator
(M.J.P.) scored all of the inventories (blind to all subject
factors) for relevancy/irrelevancy. A correlation was then
computed between the investigator's ratings and a trained,
independent rater's ratings of a subset of 20 modified MEPS,
randomly selected by the independent rater. This yielded

moderate interrater reliabilities (Relevant means, r(20) = .76, p = .0001 and Irrelevant means r(20) = .57, p = .0090).

Problem Solving Inventory (PSI) (Heppner, 1986), (Appendix D) This is a 35 item self-report scale which measures how the subject perceives his/her general problem solving ability. The format asks the respondent to agree or disagree (using a six point Likert scale) with statements describing his/her problem-solving ability. It consists of three factors, and a composite score. However, only the composite score was used in our analysis, due to the predominant use of this as a measure of perceived problem solving ability in previous studies. Internal consistency was found to be high (alpha coefficient = .90 for the total inventory). Test retest reliability (2 weeks apart) was also high (r = .89) (Heppner & Petersen, 1982). This inventory was shown to have high concurrent validity with other problem solving measures, and high divergent validity with measures of intellegence and social desirability (Heppner & Petersen, 1982).

The Life Experiences Survey (LES) (Sarason, et.al, 1978) (Appendix H) This 57-item questionnaire measures stressful events that have occurred in the subjects' life up to 12 months ago. It allows for an individualized rating of severity to be placed on the event (-3 to +3). It can be scored in several ways (e.g. negative change score, positive change score, and total change score). However, only the

negative change score will be used in this analysis, due to its predominance as a measure of stress in comparative studies (Bonner & Rich, 1982; Schotte & Clum, 1982, 1987). This inventory has moderate test-retest reliability (r = .64 after 5-6 weeks), and good construct validity (Sarason, et al., 1978).

RESULTS

Design of study and Outline of Analyses

The data were examined in a four step process. First, correlations of each of the predictor measures with each of the criterion measures were computed. These results are found in Table 1a. In addition, the correlations between diathesis x stress interactions and each of the criteria measures were computed; correlations between the two measures of stress were computed also. This latter correlation was done to support the assumption that the two stress measures assessed different types of life stress. No significant correlation was found between the two stress measures ($r = .082$, $p = .1534$). Next, subjects were grouped, by way of a median split, on their scores for each diathesis measure. Likewise, stress scores were dichotomized (for test score: high stress = D or F, low stress = A, B, C; for LES a median split was used). Means and standard deviations for each of the criteria variables, for each of these four groups, were then computed. Third, stepwise multiple-regression analyses were used to test the unique contribution of the predictor variables to each of the criteria measures. In these analyses, pre-stress scores for the predictor variable and the level of stress were entered prior to examining the contribution of the diathesis-stress interaction. Finally, both of the models were analyzed in a regression equation, to compare which measures in each model

predicted the criteria, over and above that of the other model. This final analysis was done to determine if the attributional style diatheses x stress and the problem-solving diatheses x stress constitute different pathways to depression, hopelessness and suicidal ideation.

Problem Solving Model

As shown in Table 1a, all but one of the measures associated with problem solving ability have moderate correlations with each of the criteria. Only PSI was unrelated to MSSI.

Insert Tables 1a, 1b and 1c around here

In Tables 1b and 1c, the results of the correlations of the interactions of the diathesis measures with measures of stress are furnished. Fewer of the interactions of problem-solving diatheses with the examination score were significantly related to the criteria than were interactions of problem-solving and LES.

Insert Tables 2a, 2b and 2c around here

Tables 2a, 2b and 2c present mean scores on each of the dependent measures for high and low scores in problem-solving and high and low scores on the stress measure. In

each of the cells, the interaction which contains the diathesis/stress combination that should result in the highest effect for the criterion variable has been illustrated with an asterick.

It can be seen from these tables that the relationships of problem-solving deficits x stress interactions and depression, hopelessness and suicidal ideation are in the predicted direction. These findings lend support to the hypotheses that low levels of problem-solving ability and low perceived problem-solving ability, in interaction with stress, can lead to elevated levels of depression, hopelessness and suicidal ideation. The total number of means in interaction with either measure of stress, however, does not appear to result in higher scores on any of the criterion variables.

Insert Tables 4a, 4b and 4c around here

The results of the stepwise multiple regression analyses, for the problem-solving measures in interaction with each stress measure, are summarized in Tables 4a, 4b & 4c. It should be noted, however, that in the problem-solving regression analyses, 39 observations were excluded from analyses due to incomplete or incorrectly coded data, leaving an N = 283. In these analyses, a stepwise multiple regression program was run with each of the measures (i.e.

number of relevant means, number of irrelevant means, average (mean) probability of success for each mean, number of pros for each mean and number of cons for each mean) from the modified MEPS scale in one model statement, and the composite score from the PSI in another. With each stepwise regression, a pre-exam measure of the criterion variable was always entered first into the equation, then the measure of stress was entered with all the predictor variable terms. Finally, interaction terms between each of the predictor variables crossed with each member of stress, respectively, was entered. Throughout the analyses, an alpha level of .15 was used as the criterion for a predictor variable to be entered into the regression formula. However, an alpha level of .05 was needed for the variable to remain in the formula. These differing alpha levels were chosen to determine if any significant additional variance could be explained after inclusion. If the variable could not explain sufficient additional variance to obtain an .05 alpha level it would not remain in the model.

The interaction of irrelevant means and test score + the total number of means and test score were important contributers to the prediction of depression, as was the number of irrelevant means alone and the total number of means alone, when the examination score was used as the measure of stress. When using LES as the stress measure, the interaction of irrelevant means and LES score, the number of

irrelevant means alone and the total number of means alone are significant in predicting depression.

When examining hopelessness (BHS scores) in this fashion, an interaction of the number of relevant means given and test score, an interaction of the number of cons and test score, the number of irrelevant means alone and the number of relevant means alone were important in predicting hopelessness. Using LES as the measure of stress, the number of irrelevant means given and an interaction of the number of relevant means given and LES score, become the most significant predictors.

With suicidal ideation (MSSI scores) as the criterion variable, the interaction of relevant means with test score, the interaction of cons with test score, the number of cons alone and the number of relevant means alone were important when using test score as a measure of stress. When LES scores were used as the measure of stress, the number of relevant means with life stress, the average probability of success with life stress, the number of cons alone, the number of relevant means alone and the average probability of success alone are important when LES scores are used as the measure of stress.

Using the composite score of the PSI as a measure of perception of problem solving ability, and test score as a measure of stress, a combination of PSI composite score and the interaction of PSI composite score and test score were

significant variables in predicting depression and
hopelessness. However, the interaction of PSI score with
test score was the only significant variable in predicting
suicidal ideation, when test score was used as the measure
of stress. When LES score was used as the measure of
stress. Only the PSI composite score alone was a significant
predictor of depression, hopelessness and suicidal ideation.

Insert Tables 3a, 3b and 3c around here

Attributional Style Model

For the attributional style predictor criteria, each
factor of the ASQ was first correlated separately with each
of the criteria. As shown in Table 1a, correlations were
significantly related in the predicted direction for each of
the factors of the ASQ to each of the criteria. Correlations
between the interactions of ASQ scores and each measure of
stress, with the criteria variables are shown in Tables 1b-
1c. As was found with the problem-solving variables, the
correlations of the attributional style-test score
interactions were weaker than the attributional style-life
stress interaction correlations.

Insert Table 5a around here

To determine unique contributions of the attributional style x stress interactions to the criteria, multiple regression analyses were performed. In each, the stepwise regression was conducted in the same manner as noted above (alpha level for entry = .15, for retention = .05), and in each the pre-exam measure of the criterion variable was entered first into the equation, then measure of stress and all of the predictor variables were entered into the regression equation. In a final step, the interaction variables were entered in a stepwise fashion. Using post-exam BDI scores as the criterion measure, and test score as a measure of stress, the positive-internal, negative-global, positive-global and negative-internal attributional styles were important predictors of subsequent BDI scores, as main effects. The interactions of negative-stable x test score and positive-internal x test score were significant as well. In predicting post-exam BHS scores, positive-internal, negative-internal, and negative-stable attributional styles were significant main effect terms, while negative-stable x test score and positive-internal x test score were significant interaction terms. Using post-exam MSSI scores as the criterion variable, positive-internal, negative-internal, positive-internal x test score and negative-stable x test score were significant contributors, when test score was used as the measure of stress.

Insert Table 5b around here

When LES negative change scores are used as the measure
of stress in predicting post-exam depression, hopelessness
and suicidal ideation, the regression equations change
somewhat. With post-exam BDI scores as the criterion
variable, negative-global, positive-global, negative-
internal and positive-internal attributional styles alone
were significant. Only the interaction of positive-
internal x life stress significantly accounted for any
additional variance. When post-exam BHS scores were used as
the criterion variable, negative-stable, positive-internal,
negative-internal, negative-global x LES and positive-global
attributional style x LES scores, offered the best
prediction model. Finally, with post-exam MSSI scores as
the criterion variable, negative-stable, positive-internal,
negative-internal, positive-internal x LES and positive-
global x LES combined to create the best prediction
equation.

Insert Table 6a around here

As a final step, the attributional style diathesis
measures and the problem-solving diathesis measures were
examined in a regression equation to determine their unique

contributions to the criteria. In the first analysis, the attributional style diathesis measures were entered into the regression equation first, and problem-solving diathesis measures were entered second. In the second analysis, the order of entry was reversed. These analyses were conducted to determine if either diathesis could explain variance unaccounted for by the other. The results from Table 6a indicate that no problem-solving variables were significant predictors of depression or hopelessness, over and above attributional style variables. Only relevant means x test score and # of cons x test score significantly predicted suicidal ideation, above and beyond attributional style. When the attributional style diathesis measures were analyzed in this manner, it was found that negative-global x test score and positive-global x test score predicted depression; negative-stable x test score, positive-internal x test score and negative-global x test score predicted hopelessness and positive-internal x test score, negative-stable x test score and negative-internal x test score predicted suicidal ideation above and beyond problem solving ability.

DISCUSSION

The results obtained in the present study generally support the principle hypotheses. As predicted, when a naturalistic stressor or the LES was used as a measure of stress, problem-solving deficits and causal attributions for negative events interacted with the measure of stress to predict depression, hopelessness and suicidal ideation. However, while problem-solving and attributional style were not predicted to correlate with the criteria independent of their interactions with stress, some support was found for such relationships. These latter correlations suggest that the diatheses are related to the criteria measures in an additive, as well as interactive, fashion. Evidence was also found which supported the existence of problem-solving deficits and certain causal attributional styles as two separate pathways to depression, hopelessness and suicidal ideation. As predicted, perceived problem-solving ability, as measured by the PSI, was also found to interact with both measures of stress to predict depression. However, contrary to predictions, the PSI did not interact with life stress to predict depression, hopelessness and suicidal ideation. These results will now be discussed in more detail.

The results generally support the hypothesis that problem-solving deficits will interact with stress to predict the criteria measures. Not all aspects of problem-

solving were important in predicting all the criteria,
however. Overall, the number of relevant and irrelevant
means were most frequently predictive of the problem-solving
diathesis measures. The number of cons also interacted with
both measures of stress, as has been previously reported by
Schotte & Clum (1987). These authors hypothesized that the
high number of cons for suicide ideators was due to the
"Yes, but..." attitude that was common to these individuals.
Two other aspects of problem-solving, i.e. the probability
of success for identified solutions and the number of
positive consequences for their solutions, in interaction
with test score, were also correlated with suicidal
ideation. From these results, it appears that deficits in a
number of stages of problem-solving characterize suicide
ideators, while fewer such deficits characterize those
individuals who are depressed.

The fact that some of the problem-solving variables
were predictive of depression, while others were predictive
of all of the criteria emphasizes the importance of
measuring all phases of problem-solving ability, and
suggests that some specific deficits in problem-solving
ability characterize specific psychological dysfunctions.
An important finding in the present study was that problem-
solving diatheses predicted the criteria in and of
themselves. While not predicted this finding suggests that
problem-solving deficits can lead to psychological

dysfunction, regardless of the presence of a stressor. In this model, problem-solving deficits can additively increase the probability of depression, using test score as a stress measure and depression, hopelessness and suicidal ideation, when using life stress as the stressor.

This additive model postulates that if the problem-solving deficits are profound enough, they could produce depression, hopelessness and suicidal ideation, given very low levels of stress or perhaps with no measurable level of stress at all. In addition, belief in one's problem-solving abilities, as measured by the PSI, could alleviate the effects of pre-existing stress and "insulate" the individual from depression, hopelessness and suicidal ideation. Both the interactive and the additive models appear to be important contributors to the prediction of the criteria variables in the present study. Past studies in the literature, which have examined problem-solving abilities in relation to the criteria conducted in the present study, (Nezu, et al., 1986a; Nezu, et al., 1986b; Schotte & Clum, 1982) have not found evidence for such an additive model.

The results from the present study also supported the hypothesis that certain causal attributional styles for negative events are predictive of higher levels of depression, hopelessness and suicidal ideation, in interaction with stress. In addition, it was found that certain causal attributional styles for positive events, in

interaction with stress, were found to be predictive of lower levels of these dysfunctions. Specifically, when LES was used as a measure of life stress, all of the interactions with attributional style measures were significantly correlated with each of the criteria measures. However, when the exam score was used as a measure of stress, only interactions with attributional styles for negative events were significant predictors of the criteria. This latter finding is consistent with previous research (Metalsky, et al., 1982) which found that only the causal attributions for negative events predicted depression, when in interaction with exam grade.

The differences in predictive ability for the attributional diatheses, when different measures of stress are used, seems to be because the LES measures more poignant life stress, than does performance on a midterm examination in introductory psychology. Internal, stable and global causal attributions for positive events may therefore insulate an individual from stress that is uncontrollable, as the LES has been shown to measure (Sarason, 1978), but not for more controllable stress, such as failure on a midterm examination.

When the causal attributional diatheses are used to predict depression, hopelessness and suicidal ideation, it appears that attributional style x stress interactions, significantly predict the criteria variables, though each

attributional style measure does not significantly predict each criteria measure. Although an evaluation of this sort has not yet appeared in the literature, it can be hypothesized that certain attributional diatheses are specific to each of the criteria measures. For example, it appears that internal attributions for negative events predicted hopelessness and depression, regardless of which measure of stress was used. These negative-internal attributions may reflect the pervasive self-blaming and painful introspection that is commonly seen with depressed, hopeless and suicidal individuals. Like the problem-solving diatheses, the attributional style diatheses were also found to predict the criteria measures independent of their interactions with stress. These relationships support the feasibility of an additive model, combining with an interactive model, to predict the criteria examined in the present study. None of the past studies which have examined the attributional diatheses prospectively, have found these additive effects.

In our final analysis, it was found that the problem-solving diatheses and the causal attributional diatheses, represented two separate pathways to depression, hopelessness and suicidal ideation, when test score was utilized as the measure of stress. These comparisons lend support to the reformulated Hopelessness theory of depression (Abramson, et al (1989)), which emphasizes that

causal attributions for negative events, are only <u>one</u>
possible pathway to "hopelessness depression". Findings from
this study indicate that problem-solving deficits,
particularly a subject's tendency to generate irrelevant
solutions to problems, may represent another pathway to
these psychological phenomena as well.

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Table 1a -   Correlations between the Problem Solving and Attributional Style Predictor Variables and the Criteria Measures

Predictor Variable	BDI	BHS	MSSI
PSI-Composite Score	0.30***	0.36***	0.07
# of Relevant Means	-0.24***	-0.21**	-0.27***
# of Irrelevant Means	0.20**	0.18*	0.16*
Positive-Internal Attributional Style	-0.38***	-0.37***	-0.35***
Positive-Stable Attributional Style	-0.28***	-0.24***	-0.20**
Positive-Global Attributional Style	-0.24***	-0.25***	-0.18*
Negative-Internal Attributional Style	0.26***	0.23***	0.23***
Negative-Stable Attributional Style	0.28***	0.34***	0.24***
Negative-Global Attributional Style	0.34***	0.30***	0.25***
Life Experience Survey	0.38***	0.27***	0.28***
Test Score	0.25***	0.17*	0.18**

^p < .05
*p < .01
**p < .001
***p < .0001

Table 1b - Correlations between Interactions of Problem-Solving and Attributional Style and Test Score to the Criteria Measures

Interaction	BDI	BHS	MSSI
Relevant Means x Test Score	.09	.10	-.21**
Irrelevant Means x Test Score	.29***	.21**	.25***
Probability of Success x Test Score	.17**	.11	.09
# of Pros x Test Score	.17*	.10	.14^
# of Cons x Test Score	.16*	.07	.20**
Positive-Internal A.S. x Test Score	.03	-.02	-.03
Positive-Stable A.S. x Test Score	.10	.05	.06
Positive-Global A.S. x Test Score	.09	.03	.05
Negative-Internal A.S. x Test Score	.35***	.27***	.28***
Negative-Stable A.S. x Test Score	.38***	.33***	.31***
Negative-Global A.S. x Test Score	.41***	.31***	.32***

^p < .05
*p < .01
**p < .001
***p < .0001

Table 1c – Correlations between Interactions of Problem-Solving and Attributional Style and LES to the Criteria Variables

Interaction	BDI	BHS	MSSI
Relevant Means x Life Stress	.28***	.20**	.11
Irrelevant Means x Life Stress	.33***	.33***	.31***
Probability of Success x Life Stress	.37***	.39***	.30***
# of Pros x Life Stress	.31***	.26***	.28***
# of Cons x Life Stress	.30***	.27***	.28***
Positive-Internal A.S. x Life Stress	.32***	.21**	.20**
Positive-Stable A.S. x Life Stress	.34***	.22**	.24***
Positive-Global A.S. x Life Stress	.33***	.21**	.24***
Negative-Internal A.S. x Life Stress	.36***	.27***	.29***
Negative-Stable A.S. x Life Stress	.39***	.28***	.32***
Negative-Global A.S. x Life Stress	.37***	.29***	.32***

$\hat{}p < .05$
$*p < .01$
$**p < .001$
$***p < .0001$

Table 2a – Means and Standard Deviations of BDI Scores – Aggregated by Level of Stress and Level of Problem Solving

Predictor Variable	Pred. Level	Stressor Variable	Stress Level	N	Mean	Standard Deviation
Relevant Means	High	Test Score	Low	35	2.51	3.13
	Low		Low	214	4.14	4.84
	High		High	10	5.60	6.82
	*Low		*High	63	7.08	7.29
Relevant Means	High	Life Stress	Low	21	1.76	1.81
	Low		Low	156	3.61	4.52
	High		High	24	4.46	5.44
	*Low		*High	121	6.36	6.48
Irrelevant Means	High	Test Score	Low	84	4.11	4.82
	Low		Low	165	3.82	4.60
	*High		*High	31	9.58	8.36
	Low		High	42	4.88	5.52
Irrelevant Means	High	Life Stress	Low	57	3.46	4.74
	Low		Low	120	3.37	4.13
	*High		*High	58	7.67	7.18
	Low		High	87	4.96	5.50
Total Means	High	Test Score	Low	75	3.99	4.86
	Low		Low	174	3.89	4.60
	High		High	15	6.93	6.59
	*Low		*High	58	6.86	7.41
Total Means	High	Life Stress	Low	46	2.91	4.55
	Low		Low	131	3.56	4.25
	High		High	44	6.11	5.51
	*Low		*High	101	6.02	6.69
Problem Solving Inventory	High	Test Score	Low	112	4.93	5.30
	Low		Low	137	3.09	3.91
	*High		*High	35	8.54	8.48
	Low		High	38	5.34	5.47
Problem Solving Inventory	High	Life Stress	Low	72	3.44	4.52
	Low		Low	105	3.36	4.21
	*High		*High	75	8.04	7.06
	Low		High	70	3.91	4.64

Table 2b - Means and Standard Deviations of BHS Scores -
Aggregated by Level of Stress and Level of Problem Solving

Predictor Variable	Pred. Level	Stressor Variable	Stress Level	N	Mean	Standard Deviation
Relevant Means	High	Test Score	Low	35	1.74	1.70
	Low		Low	214	2.83	3.03
	High		High	10	3.20	3.73
	*Low		*High	63	3.44	3.84
Relevant Means	High	Life Stress	Low	21	1.48	1.63
	Low		Low	156	2.54	2.78
	High		High	24	2.58	2.75
	*Low		*High	121	3.53	3.68
Irrelevant Means	High	Test Score	Low	84	3.06	3.14
	Low		Low	165	2.48	2.76
	*High		*High	31	4.32	4.56
	Low		High	42	2.74	3.00
Irrelevant Means	High	Life Stress	Low	57	2.53	2.96
	Low		Low	120	2.36	2.56
	*High		*High	58	4.26	3.98
	Low		High	87	2.78	3.12
Total Means	High	Test Score	Low	75	3.03	3.14
	Low		Low	174	2.53	2.79
	High		High	15	3.13	3.83
	*Low		*High	58	3.48	3.82
Total Means	High	Life Stress	Low	46	2.48	3.15
	Low		Low	131	2.39	2.52
	High		High	44	3.64	3.26
	*Low		*High	101	3.26	3.68
Problem Solving Inventory	High	Test Score	Low	112	3.52	3.28
	Low		Low	137	1.99	2.35
	*High		High	35	4.06	4.57
	Low		High	38	2.82	2.85
Problem Solving Inventory	High	Life Stress	Low	72	2.72	2.80
	Low		Low	105	2.20	2.60
	*High		High	75	4.53	4.09
	Low		High	70	2.12	2.32

Table 2c – Means and Standard Deviations of MSSI Scores – Aggregated by Level of Stress and Level of Problem Solving

Predictor Variable	Pred. Level	Stressor Variable	Stress Level	N	Mean	Standard Deviation
Relevant Means	High	Test Score	Low	35	0.91	1.27
	Low		Low	214	1.26	2.32
	High		High	10	0.50	6.82
	*Low		*High	63	3.01	6.31
Relevant Means	High	Life Stress	Low	21	0.80	1.29
	Low		Low	156	0.96	2.12
	High		High	24	0.83	1.09
	*Low		*High	121	2.55	4.91
Irrelevant Means	High	Test Score	Low	84	1.34	2.70
	Low		Low	165	1.14	1.91
	*High		*High	31	4.77	8.35
	Low		High	42	1.12	2.17
Irrelevant Means	High	Life Stress	Low	57	1.12	2.38
	Low		Low	120	0.86	1.86
	*High		*High	58	3.40	6.62
	Low		High	87	1.52	2.04
Total Means	High	Test Score	Low	75	1.09	2.62
	Low		Low	174	1.26	2.00
	High		High	15	2.60	5.44
	*Low		*High	58	2.69	6.08
Total Means	High	Life Stress	Low	46	0.91	2.55
	Low		Low	131	0.95	1.83
	High		High	44	1.79	3.86
	*Low		*High	101	2.48	4.82
Problem Solving Inventory	High	Test Score	Low	111	1.44	2.66
	Low		Low	137	1.02	1.74
	*High		*High	35	3.37	7.49
	Low		High	38	2.03	3.97
Problem Solving Inventory	High	Life Stress	Low	72	0.95	2.37
	Low		Low	105	0.93	1.79
	*High		*High	75	2.80	5.54
	Low		High	70	1.70	3.11

Table 3a - Means and Standard Deviations of BDI Scores - Aggregated by Level of Stress and Level of Attributional Style

Predictor Variable	Pred. Level	Stressor Variable	Stress Level	N	Mean	Standard Deviation
ASQ Positive Composite Score	High Low High *Low	Test Score	Low Low High *High	113 136 30 43	3.23 4.49 1.97 10.30	4.49 4.76 1.99 7.55
ASQ Positive Composite Score	High Low High *Low	Life Stress	Low Low High *High	85 92 58 87	2.48 4.24 3.67 7.63	3.78 4.64 4.51 6.89
ASQ Negative Composite Score	High Low *High Low	Test Score	Low Low *High High	110 139 41 32	4.51 3.45 9.71 3.25	5.01 4.35 7.89 4.02
ASQ Negative Composite Score	High Low *High Low	Life Stress	Low Low *High High	79 98 72 73	4.27 2.69 7.74 4.38	5.20 3.33 6.99 5.16

Table 3b - Means and Standard Deviations of BHS Scores - Aggregated by Level of Stress and Level of Attributional Style

Predictor Variable	Pred. Level	Stressor Variable	Stress Level	N	Mean	Standard Deviation
ASQ Positive	High	Test	Low	113	2.20	2.42
Composite	Low	Score	Low	136	3.07	3.21
Score	High		High	30	1.13	1.20
	*Low		*High	43	5.00	4.18
ASQ Positive	High	Life	Low	85	1.93	2.09
Composite	Low	Stress	Low	92	2.86	3.09
Score	High		High	58	2.05	2.51
	*Low		*High	87	4.25	3.87
ASQ Negative	High	Test	Low	110	3.03	3.18
Composite	Low	Score	Low	139	2.40	2.64
Score	*High		*High	41	4.54	4.41
	Low		High	32	1.97	2.15
ASQ Negative	High	Life	Low	79	2.70	3.03
Composite	Low	Stress	Low	98	2.18	2.37
Score	*High		*High	72	4.25	4.01
	Low		High	73	2.51	2.37

Table 3c - Means and Standard Deviations of MSSI Scores - Aggregated by Level of Stress and Level of Attributional Style

Predictor Variable	Pred. Level	Stressor Variable	Stress Level	N	Mean	Standard Deviation
ASQ Positive Composite Score	High	Test Score	Low	113	0.98	2.12
	Low		Low	136	1.40	2.26
	High		High	30	0.43	0.90
	*Low		*High	43	4.23	7.31
ASQ Positive Composite Score	High	Life Stress	Low	85	0.75	2.06
	Low		Low	92	1.12	2.01
	High		High	58	1.03	1.76
	*Low		*High	87	3.09	5.56
ASQ Negative Composite Score	High	Test Score	Low	110	1.50	2.61
	Low		Low	139	0.98	1.81
	*High		*High	41	4.24	7.48
	Low		High	32	0.66	1.31
ASQ Negative Composite Score	High	Life Stress	Low	79	1.24	2.48
	Low		Low	98	0.70	1.57
	*High		*High	72	3.35	6.00
	Low		High	73	1.20	1.89

Table 4a -Regression Summary Table of Problem-Solving Diatheses to Criteria of Depression, Hopelessness and Suicidal Ideation, Using Test Score as the Stressor

Criterion Variable = BECK DEPRESSION INVENTORY	Partial R2	F	p Value
Pre BDI	.6725	583.31	0.0001
Test Score	.0235	24.93	0.0001
Total # of Means	.0149	14.54	0.0002
# of Irrelevant Means	.0246	22.96	0.0001
# of Irrelevant Means x Test Score	.0070	7.65	0.0061
Total # of Means x Test Score	.0054	5.99	0.0150

Criterion Variable = BECK HOPELESSNESS SCALE	Partial R2	F	p Value
Pre BHS	.7084	689.92	0.0001
Test Score	.0154	17.74	0.0001
# of Relevant Means	.0052	21.37	0.0001
# of Irrelevant Means	.0272	7.03	0.0085
# of Relevant Means x Test Score	.0098	16.83	0.0008
# of Cons x Test Score	.0046	5.50	0.0198

Criterion Variable = MODIFIED SCALE FOR SUICIDAL IDEATION	Partial R2	F	p Value
Pre MSSI	.4612	240.51	0.0001
Test Score	.0149	8.49	0.0039
# of Cons	.0249	8.41	0.0040
# of Relevant Means	.0107	13.15	0.0003
# of Relevant Means x Test Score	.0126	13.71	0.0003
# of Cons x Test Score	.0142	8.39	0.0041

Table 4b - Regression Summary Table of Problem-Solving Diatheses to Criteria of Depression, Hopelessness and Suicidal Ideation, Using Life Stress as the Stressor

Criterion Variable = BECK DEPRESSION INVENTORY	Partial R2	F	p Value
Pre BDI	.6755	584.90	0.0001
LES Score	.0150	14.61	0.0002
# of Irrelevant Means	.0235	21.90	0.0001
Total # of Means	.0038	7.63	0.0061
# of Irrelevant Means x Life Stress	.0088	9.08	0.0028

Criterion Variable = BECK HOPELESSNESS SCALE	Partial R2	F	p Value
Pre BHS	.7111	691.68	0.0001
LES Score	.0108	11.98	0.0006
# of Irrelevant Means	.0271	28.94	0.0001
# of Relevant Means x Life Stress	.0138	16.54	0.0001

Criterion Variable = MODIFIED SCALE FOR SUICIDAL IDEATION	Partial R2	F	p Value
Pre MSSI	.4609	237.69	0.0001
LES Score	.0185	10.32	0.0015
# of Cons	.0252	13.61	0.0003
# Relevant Means	.0094	5.32	0.0218
Average Probability of Success	.0089	5.13	0.0243
# Relevant Means x Life Stress	.0382	23.56	0.0001
# of Pros x Life Stress	.0067	4.16	0.0424

σ

Table 4c - Regression Summary Table of Problem Solving Inventory Diatheses to Criteria of Depression, Hopelessness and Suicidal Ideation

Using Test Score as the stressor:

Criterion Variable = BECK DEPRESSION INVENTORY

	Partial R2	F	p Value
Pre BDI	.6768	630.20	0.0001
Test Score	.0159	19.37	0.0001
PSI Composite Score	.0077	7.70	0.0059
PSI Composite Score x Test Score	.0193	20.55	0.0001

Criterion Variable = BECK HOPELESSNESS SCALE

	Partial R2	F	p Value
Pre BHS	.7111	740.85	0.0001
Test Score	.0213	23.89	0.0001
PSI Composite Score x Test Score	.0045	5.10	0.0246

Criterion Variable = MODIFIED SCALE FOR SUICIDAL IDEATION

	Partial R2	F	p Value
Pre MSSI	.4698	264.98	0.0001
Test Score	.0253	14.94	0.0001

Using Life Stress as the Stressor:

Criterion Variable = BECK DEPRESSION INVENTORY

	Partial R2	F	p Value
Pre BDI	.6796	632.09	0.0001
LES Score	.0110	10.56	0.0013
PSI Composite Score	.0102	10.07	0.0017

Criterion Variable = BECK HOPELESSNESS SCALE

	Partial R2	F	p Value
Pre BHS	.7136	742.33	0.0001
LES Score	.0119	12.83	0.0004
PSI Composite Score	.0085	9.43	0.0023

Criterion Variable = MODIFIED SCALE FOR SUICIDAL IDEATION

	Partial R2	F	p Value
Pre MSSI	.4696	262.06	0.0001
LES Score	.0127	7.43	0.0068
PSI Composite Score	.0172	9.87	0.0019

Table 5a –Regression Summary Table of Causal Attributional Diatheses to criteria of Depression, Hopelessness and Suicidal Ideation, Using Test Score as the Stressor

Criterion Variable: BECK DEPRESSION SCALE

	Partial R^2	F	p Value
Pre BDI	.6631	570.82	0.0001
Test Score	.0190	17.26	0.0001
Positive-Internal	.0442	46.47	0.0001
Negative-Global	.0185	20.83	0.0001
Positive-Global	.0058	6.60	0.0107
Negative-Internal	.0038	4.43	0.0361
Negative-Stable x Test Score	.0135	16.49	0.0001
Positive-Internal x Test Score	.0143	18.55	0.0001

Criterion Variable: BECK HOPELESSNESS SCALE

	Partial R^2	F	p Value
Pre BHS	.7015	681.43	0.0001
Test Score	.0259	27.40	0.0001
Positive-Internal	.0298	35.34	0.0001
Negative-Stable	.0344	47.33	0.0001
Negative-Internal	.0047	6.53	0.0111
Negative-Stable x Test Score	.0058	8.29	0.0043
Positive-Internal x Test Score	.0094	14.01	0.0002

Criterion Variable: MODIFIED SCALE FOR SUICIDAL IDEATION

	Partial R^2	F	p Value
Pre MSSI	.4643	248.80	0.0001
Test Score	.0281	15.86	0.0001
Positive-Internal	.0122	7.01	0.0086
Negative-Internal	.0221	13.24	0.0003
Positive-Internal x Test Score	.0127	7.81	0.0056
Negative-Stable x Test Score	.0248	16.08	0.0001

Table 5b -Regression Summary Table of Causal Attributional Diatheses to criteria of Depression, Hopelessness and Suicidal Ideation, Using Life Stress as the Stressor

Criterion Variable: BECK DEPRESSION SCALE

	Partial R2	F	p Value
Pre BDI	.6661	574.55	0.0001
LES Score	.0117	14.16	0.0002
Positive-Global	.0431	5.16	0.0238
Positive-Internal	.0036	3.98	0.0470
Negative-Internal	.0082	12.58	0.0005
Negative-Global	.0123	12.57	0.0005
Positive-Internal x Life Stress	.0087	9.99	0.0017

Criterion Variable: BECK HOPELESSNESS SCALE

	Partial R2	F	p Value
Pre BHS	.7036	683.66	0.0001
LES Score	.0030	4.13	0.0430
Negative-Stable	.0243	25.59	0.0001
Positive-Internal	.0515	66.76	0.0001
Negative-Internal	.0086	11.51	0.0008
Negative-Global x Life Stress	.0030	15.80	0.0001
Positive-Global x Life Stress	.0023	8.93	0.0031

Criterion Variable: MODIFIED SCALE FOR SUICIDAL IDEATION

	Partial R2	F	p Value
Pre MSSI	.4641	246.82	0.0001
LES Score	.0108	6.55	0.0110
Positive-Internal	.0255	19.07	0.0001
Negative-Internal	.0103	7.19	0.0077
Negative-Stable	.0275	4.53	0.0342
Positive-Internal x Life Stress	.0521	35.38	0.0001
Positive-Global x Life Stress	.0063	4.34	0.0381

Table 6a Regression Comparison of Attributional Style Measures with Problem-Solving Measures, Using Test Score as the Stressor

Criterion Variable: BECK DEPRESSION SCALE			
Predictor Variable	Partial R2	F	p Value

No additional Problem-Solving Variables were significant at the .05 level
Model R2 (ATTRIBUTIONAL STYLE VARIABLES) = 0.5560

Criterion Variable: BECK HOPELESSNESS SCALE			
Predictor Variable	Partial R2	F	p Value

No additional Problem-Solving Variables were significant at the .05 level
Model R2(ATTRIBUTIONAL STYLE VARIABLES) = 0.5560

Criterion Variable: MODIFIED SCALE FOR SUICIDAL IDEATION			
Predictor Variable	Partial R2	F	p Value
# of Relevant Means x Test Score	0.0138	7.87	0.0054
# of Cons x Test Score	0.0182	7.71	0.0059

Model R2(INCLUDING ATTRIBUTIONAL STYLE VARIABLES) = 0.3698

Criterion Variable: BECK DEPRESSION SCALE			
Predictor Variable	Partial R2	F	p Value
Negative-Global A.S. x Test Score	0.0779	54.96	0.0001
Positive-Global A.S. x Test Score	0.0138	8.26	0.0044

Model R2 (INCLUDING PROBLEM-SOLVING VARIABLES) = 0.5529

Criterion Variable: BECK HOPELESSNESS SCALE			
Predictor Variable	Partial R2	F	p Value
Negative-Stable A.S. x Test Score	0.0664	13.41	0.0003
Positive-Internal A.S. x Test Score	0.0129	7.57	0.0064
Negative-Global A.S. x Test Score	0.0085	4.77	0.0298

Model R2 (INCLUDING PROBLEM-SOLVING VARIABLES) = 0.5218

```
-----------------------------------------------------------------
Criterion Variable: MODIFIED SCALE FOR SUICIDE IDEATION
Predictor Variable              Partial R2      F      p Value
-----------------------------------------------------------------
Positive-Internal A.S. x
Test Score                      0.0228        17.01      0.0001
Negative-Stable A.S. x
Test Score                      0.0139         8.68      0.0035
Negative-Internal A.S. x
Test Score                      0.0070         7.88      0.0054
Model R2 (INCLUDING PROBLEM-SOLVING VARIABLES) = 0.3692
-----------------------------------------------------------------
```

Appendix A
SUBJECTS STATEMENT OF INFORMED CONSENT

The study I am agreeing to participate in will involve the assessment of the ways in which I attribute cause to various events, and how this attributional style contributes to emotional distress following a stressor. It will also sample my problem solving ability as a factor in my response to stress. I understand that thiss will involve taking paper and pencil inventories and completing a written problem solving task. In the second assessment session, I understand I will complete several questionnaires relating to such things as depression and suicidal ideation, and I understand that those individuals who score high on these scales may be referred for counseling. Although I should experience no risk or discomfort from the inventories, some of the questionnaires may contain inquiries which I deem personal.

The personal data collected in the study will remain confidential and will not be used for any other purposes other than those described herein, without my prior approval. If the data is reported for scientific purposes, then no names or other identifying data will be included in such a report. The assessment procedures will take place at two different time intervals. The first assessment will take approximately one and one half hours, and the second session will take place approximately two weeks later and will take approximately two and one half hours. I understand that I will receive four (4) extra credit points for successfully completing the entire assessment battery.

I have read the above conditions and I realize I am free to withdraw my consent and discontinue participation in the study at any time without prejudice or penalty. I therefore, hereby agree to voluntarily participate in the research project described above and under the conditions described above.

_____   _____   _____
signature   date   student ID #

_____
local phone #

The above study has been approved by the Human Subjects Research Committee and the Institutional Review Board. Any questions that the individual might have about the project should be directed to:
Dr. George Clum, Ph.D.   4092C Derring Hall 231-5701
Michael J. Priester   4098 Derring Hall 231-8148
Principle Investigators

Appendix B

The Attributional Style Questionnaire (A S Q)
Peterson, C., Semmel, A. von Baeyer, C. Abramson, L.Y.,
Metalsky, G.I., Seligman, M.E.P. (1982)
Cognitive Therapy and Research, 6(3), 287-300.

Instructions: Please try to vividly imagine yourself in the
situations that follow. If such a situation happened to
you, what would you feel would have caused it? While events
may have many causes, we want you to pick only one - the
major cause if this event happened to *you*. Please write
this cause in the blank provided after each event. Next we
want you to answer some questions about the *cause* and a
final question about the *situation*. To summarize, we want
you to:

1. Read each situation and vividly imagine it
   happening to you.

2. Decide what you feel would be the *major* cause
   of the situation if it happened to you.

3. Write one cause in the blank provided

4. Answer three questions about the *cause*.

5. Answer one question about the *situation*.

6. Go on to the next situation.

1) YOU MEET A FRIEND WHO COMPLIMENTS YOU ON YOUR APPEARANCE.

Write down one major cause_____

Is the cause of you getting a compliment due to something
about you or something about other people or circumstances?

```
Totally due to                                    Totally due
other people or  1   2   3   4   5   6   7          to   me
circumstances
```

In the future when you get a compliment, will this cause
again be present?

```
Will never again                                  Will always
be present       1   2   3   4   5   6   7         be present
```

Is the cause something that just influences you getting
compliments, or does it also influence other areas of your
life?
```
Influences just                                   Influences all
that particular                                   situations in
situation        1   2   3   4   5   6   7         my life
```

2) YOU HAVE BEEN LOOKING FOR A JOB UNSUCCESSFULLY FOR SOME
TIME.

Write down one major cause_____

Is the cause of your unsuccessful job search due to
something about you or something about other people or
circumstances?

```
Totally due to                                    Totally due
other people or  1   2   3   4   5   6   7          to me
circumstances
```

In the future when looking for a job, will this cause again
be present?

```
Will never again                                  Will always
 be present      1   2   3   4   5   6   7         be present
```

Is the cause something that just influences looking for a
job, or does it also influence other areas of your life?

```
Influences just                                   Influences all
that particular  1   2   3   4   5   6   7         situations in
situation                                          my life
```

3) YOU BECOME VERY RICH

Write down one major cause_____

Is the cause of your wealth due to something about you or
something about other people or circumstances?

Totally due to   Totally due
other people or   1   2   3   4   5   6   7   to me
circumstances

In the future when you attempt to obtain wealth, will this
cause again be present?

Will never   Will always be
again be present 1   2   3   4   5   6   7   present

Is the cause something that just influences obtaining wealth
or does it also influence other areas of your life?

Influences just   Influences all
that particular   1   2   3   4   5   6   7   situations in
situation   my life

4) A FRIEND COMES TO YOU WITH A PROBLEM AND YOU DON'T TRY TO HELP THEM.

Write down one major cause_____

Is the cause of your not helping your friend due to
something about you or something about other people or
circumstances?

Totally due to   Totally due
other people or   1   2   3   4   5   6   7   to me
circumstances

In the future when a friend comes to you with a problem,
will this cause again be present?

Will never   Will always
again be   1   2   3   4   5   6   7   be present
present

Is the cause something that just influences what happens
when a friend comes to you with a problem, or does it also
influence other areas of your life?

Influences just   Influences all
this particular   1   2   3   4   5   6   7   situations in
situation   my life

5) YOU GIVE AN IMPORTANT TALK IN FRONT OF A GROUP AND THE AUDIENCE REACTS NEGATIVELY

Write down one major cause_____

Is the cause of the audience reacting negatively due to something about you or about other people or circumstances?

```
Totally due to                            Totally due
other people or    1  2  3  4  5  6  7      to me
circumstances
```

In the future when giving talks, will this cause again be present?

```
Will never                                Will always
again be present   1  2  3  4  5  6  7     be present
```

Is this cause something that just influences giving talks or does it also influence other areas of your life?

```
Influences just                           Influences all
this particular    1  2  3  4  5  6  7    situations in
situation                                     my life
```

6) YOU DO A PROJECT THAT IS HIGHLY PRAISED

Write down one major cause_____

Is the cause of your project being praised due to something about you or something about other people or circumstances?

```
Totally due                               Totally due
to other people    1  2  3  4  5  6  7    to me
or circumstances
```

In the future, when you do a project, will this cause again be present?

```
Will never again                          Will always
be present         1  2  3  4  5  6  7     be present
```

Is this cause something that just influences doing projects, or does it also influence other areas of your life?

```
Influences just                           Influences all
this particular    1  2  3  4  5  6  7    situations in
situation                                     my life
```

7) YOU MEET A FRIEND WHO ACTS HOSTILELY TOWARD YOU.

Write down the major cause_____

Is the cause of your friend acting hostile due to something
about you or something about other people or circumstances?

```
Totally due                                    Totally due
to other people      1   2   3   4   5   6   7   to me
or circumstances
```

In the future, when interacting with friends, will this
cause again be present?

```
Will never again                               Will always
be present           1   2   3   4   5   6   7   be present
```

Is the cause something the just influences interacting with
friends or does it also influence other areas of your life?

```
Influences just                                Influences all
this particular      1   2   3   4   5   6   7   situations in
situation                                            my life
```

8) YOU CAN'T GET ALL THE WORK DONE THAT OTHERS EXPECT OF
YOU.

Write down one major cause_____

Is the cause of your not getting the work done due to
something about you or something about the other people or
circumstances?

```
Totally due to                                 Totally due
other people or      1   2   3   4   5   6   7   to me
circumstances
```

In the future when doing the work that others expect, will
this cause again be present?

```
Will never again                               Will always
be present           1   2   3   4   5   6   7   be present
```

Is the cause just something that affects finishing work
that others expect of you or does it also influence other
areas of your life?

```
Influences just                                Influences all
this particular      1   2   3   4   5   6   7   situations in
situation                                            my life
```

9) YOUR SPOUSE (BOYFRIEND/GIRLFRIEND) HAS BEEN TREATING YOU
MORE LOVINGLY.

Write down one major cause_____

Is the cause of your significant other treating you more
lovingly due to something about you or something about other
people or circumstances?

```
Totally due                                      Totally due
to other people    1   2   3   4   5   6   7      to me
or circumstances
```

In the future when interacting with your significant other,
will this cause again be present?

```
Will never                                       Will always
again be            1   2   3   4   5   6   7     be present
present
```

Is the cause something that just affects how your signi-
ficant other treats you, or does it also influence other
areas of your life?

```
Influences just                                  Influences all
this particular    1   2   3   4   5   6   7      situations in
situation                                         my life
```

10) YOU APPLY FOR A POSITION THAT YOU WANT VERY BADLY (e.g.
important job, graduate school admission) AND YOU GET IT.

Write down one major cause_____

Is the cause of your obtaining the position you wanted due
to something about you or something about the other people
or circumstances?

```
Totally due to                                   Totally due
other people        1   2   3   4   5   6   7     to me
or circumstances
```

In the future when you attempt to obtain another such
position, will this cause again be present?

```
Will never                                       Will always
again be present    1   2   3   4   5   6   7     be present
```

Is the cause something that just affects getting this
desired position, or does it also influence other areas of
your life?

```
Influences just                                    Influences all
this particular      1    2    3    4    5    6    7  situations in
situation                                           my life
```

11) YOU GO OUT ON A DATE AND IT GOES BADLY

Write down the one major cause_____

Is the cause of the date going badly due to something about
you or something about other people or circumstances?

```
Totally due                                        Totally due
to other people     1    2    3    4    5    6    7  to me
or circumstances
```

In the future when dating, will this cause again be present?

```
Will never                                         Will always
again be present    1    2    3    4    5    6    7   be present
```

Is the cause something that just influences dating or does
it also influence other areas of your life?

```
Influences just                                    Influences all
this particular      1    2    3    4    5    6    7 situations in
situation                                           my life
```

12) YOU GET A RAISE
Write down the one major cause_____

Is the cause of you getting a raise due to something about
you or something about other people or circumstances?

```
Totally due                                        Totally due
to other people     1    2    3    4    5    6    7 to me
or circumstances
```

In the future when anticipating a raise, will this cause
again be present?

```
fWill never                                        Will always
again be present    1    2    3    4    5    6    7 be present
```

Is the cause something that just influences getting a raise,
or does it also influence other areas of your life?

```
Influences just                                    Influences all
this particular      1    2    3    4    5    6    7 situations in
situation                                           my life
```

Appendix C

Modified MEPS Scale

Step One: Please read the following situation. You are given both a present situation and a desired outcome. Please read this carefully; you will be using this situation throughout the rest of this procedure.

Present situation:
(Fall, 1989)
    You have just failed the first introductory psychology test after the drop date for classes.
(Spring, 1990)
    You have just failed the first introductory psychology test.

Desired outcome:

    You end up feeling O.K. about your performance.

Step two: Now that you have read about the problem situation and the desired outcome, please list as many as six different things you could do to solve the problem. That is, write down as many as six different things you could do to reach the desired outcome. You will find space for each of your ideas on this page and on the two pages that follow; the spaces in which you are to write your answers are the ones numbered from one to six.

1) _____

     0 1 2 3 4 5 6 7 8 9 10

Pros and Cons:

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

2) _____

     0 1 2 3 4 5 6 7 8 9 10

Pros and Cons:

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

3) _____

          0   1   2   3   4   5   6   7   8   9   10
- -

Pros and Cons:

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

4) _____

          0   1   2   3   4   5   6   7   8   9   10
- -

Pros and Cons:

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

5) _____

       0   1   2   3   4   5   6   7   8   9   10

- -

Pros and Cons:

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

6) _____

       0   1   2   3   4   5   6   7   8   9   10

- -

Pros and Cons:

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

_____ -3 -2 -1 0 1 2 3

Step three: Now that you have written down some of the
things you think you could do to solve the problem (to reach
the desired outcome) please go back and circle the number
below each alternative which you believe is closest to how
likely that action would be to solve the problem. If you
think there is no chance that it would work, circle the
number 0, if you are sure that it will work, circle the
number 10. Just circle any number between 0 and 10 that you
think shows how likely that alternative is to work.

Step four: Now that you have told us how likely each plan is
to work, please go back to the different ideas you wrote
down and tell us what the Pros are of each plan (i.e. good
things, benefits, etc.) and what the Cons are of each plan
(i.e. bad things, costs, etc.) Please list as many as six
pros and cons for each plan you wrote down.

Step five: Now go back and rate how important each pro and
con is. If a pro is very good or important, circle the
number 3, if it is only fairly important, circle the number
2, if it is only a little important, circle the number 1. If
a con is very bad, circle -3, if it is fairly bad circle -2,
if it is only a little bad, circle -1. If a pro or con just
doesn't matter, then circle the 0.

Step Six: Now we would like you to write a story in which
you go about achieving the desired outcome. That is, we want
you to write a story in which you solve the problem which
you have been given and write the middle part of the story.

Please write your story below: (continue on back of page if
necessary)

Appendix D

Problem Solving Inventory

Purpose: This is not a test, there are no right or wrong answers. Rather, it is an inventory designed to find out how people normally react to problems and events in their daily interactions. We are not talking about math or science problems, but rather about personal or social problems. Please respond to the items as honestly as you can, so as to most accurately portray how you handle problems. Don't respond to the statements as you think you should in order to solve problems, rather respond to the statements in such a way as to most accrately reflect how you actually behave when you solve personal problems.

Ask yourself: Do I ever do this behavior?

Directions: Below are 35 statements. You are to read each statement and then indicate the extent to which you agree or disagree with that statement, using the following alternatives:

> 1 = Strongly Agree
> 2 = Moderately Agree
> 3 = Slightly Agree
> 4 = Slightly Disagree
> 5 = Moderately Disagree
> 6 = Strongly Disagree

Please mark your response on the opscan sheet.

1. When a solution to a problem is unsuccessful, I do not examine why it didn't work.

2. When I am confronted with a complex problem, I do not bother to develop a strategy to collect information so I can define exactly what the problem is.

3. When my first efforts to solve a problem fail, I become uneasy about my ability to handle the situation.

4. After I have solved a problem, I do not analyze what when right or what went wrong.

5. I am usually able to think up creative and effective alternatives to solve a problem.

6. After I have tried to solve a problem with a certain course of action, I take time and compare the actual outcome to what I though should have happened.

7. When I have a problem, I think up as many possible ways to handle it as I can until I can't come up with any more ideas.

8. When confronted with a problem, I consistently examine my feelings to find out what is going on in a problem situation.

9. When I am confused with a problem, I do not try to define vague ideas or feelings into concrete or specific terms.

10. I have the ability to solve most problems, even though initially no solution is immediately apparent.

11. Many problems I face are too complex for me to solve.

12. I make decisions and am happy with them later.

13. When confronted with a problem, I tend to do the first thing that I can think to solve it.

14. Sometimes I do not stop and take time to deal with my problems, but just kind of muddle ahead.

15. When deciding on an idea or possible solution to a problem, I do not take time to consider the chances of each alternative being successful.

16. When confronted with a problem, I stop and think about it before deciding on a next step.

17. I generally go with the first good idea that comes to my mind.

18. When making a decision, I weight the consequences of each alternative and compare them against each other.

19. When I make plans to solve a problem, I am almost certain that I can make them work.

20. I try to predict the overall result of carrying out a particular course of action.

21. When I try to think up possible solutions to a problem, I do not come up with very many alternatives.

22. In trying to solve a problem, one strategy that I often use is to think of past problems that have been similar.

23. Given enough time and effort, I believe I can solve most problems that confront me.

24. When faced with a novel situation, I have confidence that I can handle problems that may arise.

25. Even though I work on a problem, sometimes I feel like I am groping or wandering, and not getting down to the real issue.

26. I make snap judgements and regret them later.

27. I trust my ability to solve new and difficult problems.

28. I have a systematic method for comparing alternatives and making decisions.

29. When I try to think of ways of handling a problem, I do not try to combine different ideas together.

30. When confronted with a problem, I don not usually examine what sort of external things in my environment may be contributing to my problem.

31. When I am confronted by a problem, one of the first things I do is survey the situation and consider all of the relevant pieces of information.

32. Sometimes I get so charged up emotionally, that I am unable to consider may ways of dealing with my problem.

33. After making a decision, the outcome I expected usually matches the actual outcome.

34. When confronted with a problem, I am unsure of whether I can handle the situation.

35. When I become aware of a problem, one of the first things I do is to find out exactly what the problem is.

NOTE: check your computer sheet, you should have made 35 responses.

Appendix E

Beck Inventory

On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick the one statement in each group which best describes the way you have been feeling TODAY, that is right now. Circle the number beside the statement you picked. If several statements in the group appear to apply equally well, circle each one. Be sure to read all of the statements in each group befor making your choice.

1. 0   I do not feel sad.
    1   I feel sad.
    2   I am sad all of the time and I can't snap out of it.
    3   I am so sad or unhappy that I can't stand it.

2. 0   I am not particularly discouraged about the future.
    1   I feel discouraged about the future.
    2   I feel I have nothing to look forward to.
    3   I feel that the future is hopeless and that things cannot improve.

3. 0   I do not feel like a failure.
    1   I feel I have failed more than the average person.
    2   As I look back on my life, all I can see is a lot of failures.
    3   I am a complete failure as a person.

4. 0   I get as much satisfaction out of things as I used to.
    1   I don't enjoy things the way I used to.
    2   I don't get real satisfaction out of anything anymore.
    3   I am dissatisfyied or bored with everything.

5. 0   I don't feel particularly guilty.
    1   I feel guilty a good part of the time.
    2   I feel quite guilty most of the time.
    3   I feel guilty all of the time.

6. 0   I don't feel I am being punished.
    1   I feel I may be punished.
    2   I expect to be punished.
    3   I feel I am being punished.

7. 0   I don't feel disappointed in myself.
    1   I am disappointed in myself.
    2   I am disgusted with myself.
    3   I hate myself.

8. 0   I don't feel I am any worse than anyone else.
   1   I am critical of myself for my weaknesses or mistakes.
   2   I blame myself all the time for my faults.
   3   I blame myself for everything bad that happens.

9. 0   I don't have any thoughts of killing myself.
   1   I have thoughts of killing myself, but I would not carry them out.
   2   I would like to kill myself.
   3   I would kill myself if I had the chance.

10. 0   I don't cry any more than usual.
   1   I cry more now than I used to.
   2   I cry all of the time now.
   3   I used to be able to cry, but now I can't cry even though I want to.

11. 0   I am no more irritated now than I ever am.
   1   I get annoyed or irritated now more easily than I used to.
   2   I feel irritated all of the time now.
   3   I don't get irritated at all by the things that used to irritate me.

12. 0   I have not lost interest in other people
   1   I am less interested in other people than I used to be.
   2   I have lost most of my interest in other people.
   3   I have lost all of my interest in other people.

13. 0   I make decisions about as well as I ever could.
   1   I put off making decisions more than I used to.
   2   I have greater difficulty in making decisions than before.
   3   I can't make decisions at all anymore.

14. 0   I don't feel I look any worse than I used to.
   1   I am worried that I am looking old or unattractive.
   2   I feel that there are permanent changes in my appearance that make me look unattractive.
   3   I believe I look ugly.

15. 0   I can work about as well as before.
   1   It takes an extra effort to get started at doing anything.
   2   I have to push myself very hard to do anything.
   3   I can't do ay work at all.

16. 0   I can sleep as well as usual.
    1   I don't sleep as well as I used to.
    2   I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
    3   I wake up several hours earlier than I used to and cannot get back to sleep.

17. 0   I don't get more tired than usual.
    1   I get tired more easily than I used to.
    2   I get tired from doing almost anything.
    3   I am too tired to do anything.

18. 0   My appetite is no worse than usual.
    1   My appetite is not as good as it used to be.
    2   My appetite is much worse now.
    3   I have no appetite at all anymore.

19. 0   I haven't lost much weight, if any, lately.
    1   I have lost more than 5 pounds.   I AM PURPOSELY TRYING TO LOSE
    2   I have lost more than 10 pounds.   WEIGHT BY EATING LESS.
    3   I have lost more than 15 pounds.   YES_____ NO_____

20. 0   I am no more worried about my health than usual.
    1   I am worried about physical problems such as aches and pains; or upset stomach; or constipation.
    2   I am very worried about physical problems and it's hard to think of much else.
    3   I am so worried about my physical problems that I cannot think about anything else.

21. 0   I have not noticed any recent change in my interest in sex.
    1   I am less interested in sex than I used to be.
    2   I am much less interested in sex now.
    3   I have lost interest in sex completely.

Appendix F

B E C K   H - S C A L E

INSTRUCTIONS: On this questionnaire are a number of statements. Please read each statement carefully. If the statement is true, or mostly true, circle the T in front of the statement. If the statement is false, i.e. you do not believe it, circle the F. Please answer how you feel <u>today</u>, that is <u>right now</u>.

T F 1. I look forward to the future with hope and enthusiasm.

T F 2. I might as well give up because I can't make things go better for myself.

T F 3. When things are going badly, I am helped by knowing they can't stay that way forever.

T F 4. I can't imagine what my life would be like in 10 years.

T F 5. I have enough time to accomplish the things I most want to do.

T F 6. In the future, I expect to succeed in what concerns me most.

T F 7. My future seems dark to me.

T F 8. I expect to get more of the good things in life than the average person.

T F 9. I just don't get the breaks, and there's no reason to believe I will in the future.

T F 10. My past experiences have prepared me well for my future.

T F 11. All I can see ahead of me is unpleasantness rather than pleasantness.

T F 12. I don't expect to get what I really want.

T F 13. When I look ahead to the future, I expect I will be happier that I am now.

T F 14. Things just won't work out the way I want them to

T F 15. I have great faith in the future.

T F 16. I never get what I want, so it's foolish to want anything.

T F 17. It is very unlikely that I will get real satisfaction in the future.

T F 18. The future seems vague and uncertain to me.

T F 19. I can look forward to more good times than bad.

T F 20. There's no use in really trying to get something I want, because I probably won't get it.

Appendix G

The Life Experiences Survey

Listed below are a number of events which sometimes bring about change in the lives of those who experience them and which necessitate social readjustment. *Please check those events which you have experienced in the recent past and indicate the time period during which you have experienced each event.* Be sure that all check marks are directly across the items that they correspond to.

Also, for each item checked below, *please indicate the extent to which you viewed the event as having either a positive or negative impact on your life* at the time the event occurred. That is, *indicate the type and the extent of impact the event had.*

* A rating of -3 would indicate an extremely negative impact
* A rating of 0 would suggest no impact, positive or negative
* A rating of +3 would indicate an extremely positive impact

<u>Section 1:</u>

E V E N T	0-6	7-12	EXT−	MOD−	SOM−	NO==	SLI+	MOD+	EXT+
	M O N	T H S							
1. Marriage			-3	-2	-1	0	+1	+2	+3
2. Detention in Jail			-3	-2	-1	0	+1	+2	+3
3. Death of spouse			-3	-2	-1	0	+1	+2	+3
4. Major change in sleeping habits			-3	-2	-1	0	+1	+2	+3
5. Beginning a new school experience at a higher academic level (college, grad school,etc.)			-3	-2	-1	0	+1	+2	+3
6. Changing to a new school at same academic level			-3	-2	-1	0	+1	+2	+3
7. Academic probation			-3	-2	-1	0	+1	+2	+3
8. Being dismissed from dormitory or other living residence			-3	-2	-1	0	+1	+2	+3
9. Failing an important exam			-3	-2	-1	0	+1	+2	+3
10. Changing a major			-3	-2	-1	0	+1	+2	+3
11. Failing a course			-3	-2	-1	0	+1	+2	+3
12. Dropping a course			-3	-2	-1	0	+1	+2	+3
13. Joining a fraternity/ sorority			-3	-2	-1	0	+1	+2	+3
14. Financial problems concerning school (not having enough money to continue)			-3	-2	-1	0	+1	+2	+3

15. Major change in arguments with significant other	-3	-2	-1	0	+1	+2	+3
16. Major change in usual type and/or amount of recreation	-3	-2	-1	0	+1	+2	+3
17. Borrowing more than $10,000	-3	-2	-1	0	+1	+2	+3
18. Borrowing less than $10,000	-3	-2	-1	0	+1	+2	+3
19. Being fired from job	-3	-2	-1	0	+1	+2	+3
20. Females: having an abortion	-3	-2	-1	0	+1	+2	+3
21. Males: girlfriend/wife having an abortion	-3	-2	-1	0	+1	+2	+3
22. Major personal illness injury	-3	-2	-1	0	+1	+2	+3
23. Major change in social activities (increased or decrased participation	-3	-2	-1	0	+1	+2	+3
24. Major change in living conditions	-3	-2	-1	0	+1	+2	+3
25. Divorce	-3	-2	-1	0	+1	+2	+3
26. Serious injury or illness of a close friend	-3	-2	-1	0	+1	+2	+3
27. Retirement from work	-3	-2	-1	0	+1	+2	+3
28. Son or daughter leaving home	-3	-2	-1	0	+1	+2	+3
29. Ending of formal schooling	-3	-2	-1	0	+1	+2	+3
30. Separation of spouse (due to work,school,etc.)	-3	-2	-1	0	+1	+2	+3
31. Engagement	-3	-2	-1	0	+1	+2	+3
32. Breaking up with girlfriend/ boyfriend	-3	-2	-1	0	+1	+2	+3
33. Leaving home for 1st time	-3	-2	-1	0	+1	+2	+3
34. Reconciliation with boy- friend/girlfriend	-3	-2	-1	0	+1	+2	+3
35. Death of close family member:							
a. mother	-3	-2	-1	0	+1	+2	+3
b. father	-3	-2	-1	0	+1	+2	+3
c. sister	-3	-2	-1	0	+1	+2	+3
d. brother	-3	-2	-1	0	+1	+2	+3
e. grandmother	-3	-2	-1	0	+1	+2	+3
f. grandfather	-3	-2	-1	0	+1	+2	+3
g. other (specify)	-3	-2	-1	0	+1	+2	+3
36. Major change in eating habits	-3	-2	-1	0	+1	+2	+3
37. Forclosure on loan (credit problems)	-3	-2	-1	0	+1	+2	+3
38. Death of close friend	-3	-2	-1	0	+1	+2	+3
39. Outstanding personal achievement	-3	-2	-1	0	+1	+2	+3
40. Minor law violations	-3	-2	-1	0	+1	+2	+3
41. Female: pregnancy	-3	-2	-1	0	+1	+2	+3
42. Male: wife/girlfriend pregnant	-3	-2	-1	0	+1	+2	+3

43. Changed work situation
(new responsibility, work
conditions, hours, etc.)   -3 -2 -1 0 +1 +2 +3
44. New job   -3 -2 -1 0 +1 +2 +3
45. Serious illness or injury
of close family member
(specify)   -3 -2 -1 0 +1 +2 +3
46. Sexual difficulties   -3 -2 -1 0 +1 +2 +3
47. Trouble with employer   -3 -2 -1 0 +1 +2 +3
48. Trouble with in-laws   -3 -2 -1 0 +1 +2 +3
49. Major change in financial
status (a lot better
or a lot worse)   -3 -2 -1 0 +1 +2 +3
50. Major change in closeness
of family members   -3 -2 -1 0 +1 +2 +3
51. Gaining a new family
member   -3 -2 -1 0 +1 +2 +3
52. Change of residence   -3 -2 -1 0 +1 +2 +3
53. Marital separation from mate
(due to conflicts)   -3 -2 -1 0 +1 +2 +3
54. Major change in church
activities   -3 -2 -1 0 +1 +2 +3

The Modified Scale for Suicidal Ideation

Adapted From:

Miller, I.W., Norman, W.H., Bishop, S.B. & Dow, M.G. (1986)
    The Modified Scale for Suicidal Ideation: Reliability
    and Validity. _Journal of Consulting and Clinical
    Psychology_, _5_, 724-725.

Instructions: The purpose of this scale is to assess the
presence or absence of suicidal thought and the degree of
severity of this thought. The time frame of this is how you
are feeling today, that is, right now.

1. Over the past day, have you had the desire to die? If so,
how strong has the desire been?

0	None - I have no current wish to die.
1	Weak - I am unsure about whether I want to die.
2	Moderate - I am preoccupied with ideas about death
3	Strong - I have a strong desire to die.

2. Over the past day, have you had the desire to live? If
so, how strong has the desire been?

0	Strong - I have a strong desire to live.
1	Moderate - I think about wanting to live quite often, and if I think about wanting to die, I can easily turn my thoughts away from it.
2	Weak - I am unsure about wanting to live.
3	None - I have no wish to live.

3. Over the past day, when you have thought about suicide,
how strong was the desire to act on that thought?

0	None - If I am thinking of suicide, I definitely do not want to act on these thoughts.
1	Weak - When I think of suicide, I am unsure of whether or not I wish to make an attempt.
2	Moderate - When I think of suicide, I have had the desire to act on my thoughts at least once.
3	Strong - I have wanted to act on my thoughts of suicide several times - I am almost certain I wish to kill myself.

4. Over the past day, have you had the desire to die by not taking care of your health, eating or drinking too much (or too little), or leaving your life or death to chance? (i.e. carelessly crossing a busy street)

    0   None - I have taken precautions to maintain my
            life.
    1   Weak - I am not sure whether I would leave my
            life or death to chance.
    2   Moderate - I would definitely leave my life or
            death to chance, if given the opportunity to
            do so.
    3   Strong - I have avoided steps necessary to
            maintain or save my life.

5. Over the past day, when you have had thoughts about suicide, how long did these thoughts last?

    0   Brief periods or nonexistant.
    1   Short duration, several minutes.
    2   Longer, an hour or more.
    3   Almost continuous, I can't get them off my mind.

6. Over the past day, how often have these thoughts of suicide come?

    0   Rarely - only once in the past day (or
            nonexistent)
    1   Twice or more in the last day.
    2   About once every hour.
    3   Several times an hour.

7. Over the past day, how intense or vivid have the thoughts been?
    0   Not at all vivid or intense (or nonexistent)
    1   Slightly vivid or intense
    2   Moderately vivid or intense
    3   Very vivid or intense

8. Can you think of anything that would keep you from killing yourself?

    0   I can think of at least one definite deterrent.
    1   I can think of at least one deterrent, but it
            would not keep me from killing myself under all
            circumstances.
    2   I am unsure if there are any deterrents that would
            prevent my suicide.
    3   I cannot think of anything at all that would keep
            me from killing myself.

9. Right now, when you think about your reasons for living vs. your reasons for dying, which of the two are stronger?

    0   I cannot think of any reasons for dying.
    1   My reasons for living are stronger than my
         reasons for dying.
    2   I am unsure which are stronger, or they are about
         equal in strength.
    3   My reasons for dying are much stronger than my
         reasons for living (or I have no reasons to live).

10. Over the past day, have you been thinking of a way in which you might kill yourself? That is, have you thought about the method you might choose?

    0   I have not considered a method of suicide.
    1   I have given it some consideration, but I am
         unsure of the method.
    2   I know the method I wish to use, but the details
         of exactly how I wish to kill myself are unclear.
    3.   I know the method I wish to kill myself precisely.

11. Over the past day, have you thought about how much effort or time is involved in the method chosen to kill yourself? Do you forsee this opportunity being present in the near future?

    0   I do not have a method, or it is not currently
         available to me now or in the near future.
    1   I have a method, but it is not readily available,
         it would take time and opportunity.
    2   I have a method, and it would not take a great
         deal of effort to make it available.
    3   I have a method that is readily available at
         almost anytime.

12. Right now, do you feel like you have the courage to commit suicide?

    0   I do not have the courage to kill myself.
    1   I am unsure that I have the courage to kill
         myself.
    2   I am quite sure I have the courage to kill
         myself.
    3   I am very sure or certain I have the courage
         to kill myself.

13. Right now, do you have the ability to carry out a suicide plan? Would you be effective in ending your life?

     0   I do not feel competent to kill myself
     1   I am unsure if I would be competent to kill myself.
     2   I am somewhat sure I would be competent to kill myself.
     3   I am convinced that I would be competent in killing myself.

14. Right now, how sure are you that suicide is something you might actually do sometime, if left to your own devises?

     0   I am certain I will not make an attempt.
     1   I am unsure I will make an attempt one day, or the chances are about equal.
     2   I am almost certain I will make an attempt one day.
     3   I am certain I will make an attempt one day.

15. Over the past day, have you noticed yourself talking about death more than usual, even jokingly?

     0   I have not referred to death in the past day.
     1   I have talked about death, but no specific mention was made about wanting to die.
     2   I have specifically said I want to die.
     3.   I have confided with someone that I want to commit suicide.

16. Over the past day, have you written about suicide or death (i.e. in poetry or in a diary)?

     0   I have not written about suicide or death in the past day.
     1   I have made general comments regarding death in the past day.
     2   I have made specific comments about wanting to die.
     3   I have made a specific reference about planning my suicide.

Curriculum Vitae: Michael J. Priester

PERSONAL INFORMATION
                        Born: April 4, 1966
                        Birthplace: Greenville, SC

Business Address: Psychological Services Center
                        Department of Psychology
                        Virginia Polytechnic Institute
                        and State University
                        Blacksburg, VA 24061
                        (703)-231-6914 or (703)-231-8148

Home Address: 6400A Foxridge
                        Blacksburg, VA 24060
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EDUCATION

M.S. - Clinical Psychology
Virginia Polytechnic Institute
and State University
Blacksburg, VA
Thesis: "Evaluating Reactions To Stress Following A
Naturalistic Stressor" (N=350)
M.S. degree expected November 1990
GPA: 3.6333

B.A. - Psychology
University of South Florida
Tampa, Florida
B.A. awarded December, 1988
GPA: 3.65

PROFESSIONAL AFFILIATIONS

Student Affiliate, Association for the Advancement of
    Behavior Therapy

Student Affiliate, Florida Association of Behavior Analysis

Student Affiliate, American Psychological Association
(Division 12, Clinical Psychology)

ACADEMIC HONORS

University of South Florida
    Honors Convocation, Fall 1987
    Dean's List, 1987/1988

VPI & SU
    Instructional Fee Scholarship, 1988-89

EMPLOYMENT

September, 1990   Graduate Teaching Assistant. Department of
to Present   Psychology, Virginia Polytechnic Institute
                     and State Univeristy, Blacksburg, Virginia.
                     Duties: Assisted professor in instruction
                     of a graduate course in Personality Assess-
                     ment.

May 1990 –   Graduate Clinician. Psychological Services
September, 1990   Center, Department of Psychology, Virginia
                     Polytechnic Institute and State University,
                     Blacksburg, Virginia. Duties: Outpatient
                     psychotherapy with a caseload of 15-20
                     clients, administering and interpreting
                     intellectual assessments to adults and
                     children, as well as objective and
                     projective personality assessments, for the
                     purpose of educational placements and
                     forensic consultations.

August, 1988 –   Graduate Assistant. Department of
May 1990   Psychology, Virginia Polytechnic Institute
                     and State University, Blacksburg, Virginia.
                     Duties: Teaching assistant for under-
                     graduate classes. (Introductory Psychology,
                     Abnormal Psychology, Psychology of Learning
                     Taught Laboratory section for Personality
                     Research course.

July, 1987 –   Behavior Modification Specialist.
August, 1988   J. Clifford MacDonald Center,
                     Tampa, Florida. Duties: Developed,
                     implemented and supervised behavior
                     programs with a caseload of approximately
                     60 Mentally Retarded clients.

CLINICAL PRACTICA

May 1990 –   Clinical Externship, St. Albans Psychiatric
Present   Hospital, Cognitive Therapy Program.
                     Supervisor: Glenda F. Camp, Ph.D.
                     Advisors: Thomas Camp, Ph.D.
                                 John Ludgate, M.Phil. (480 hrs)

1989-1990   Clinical Psychology Practicum.
                   Supervisors: Richard E. Eisler, Ph.D
                   Psychological Services Center, Department
                   of Psychology, Virginia Polytechnic
                   Institute and State University (330 hrs)

1988-1989   Clinical Psychology Practicum.
                   Supervisors: Caryn L. Carlson, Ph.D
                                 Richard A. Winett, Ph.D
                                 Thomas H. Ollendick, Ph.D
                   Psychological Service Center, Department of
                   Psychology, Virginia Polytechnic Institute
                   and State University (180 hrs)

PUBLICATIONS AND PRESENTATIONS

1989   Poster presentation at the annual meeting of
                   the Association for_the Advancement of
                   Behavior Therapy, Washington, DC:

Preventing Youth Suicide: A Controlled Treatment Outcome
Study. Miriam S. Lerner, West Virginia University, George
Clum, Kim Ragsdale and Michael J. Priester, VPI & SU.

1988   Paper presentation at the regional meeting
                   of the Hillsborough Chapter of the Florida
                   Association of Behavior Analysis, Tampa,
                   Florida:

Controlling Verbal and Physical Aggression in a Moderately
Mentally Retarded Female using Differential Reinforcement.
Michael J. Priester & Mara Brad, J. Clifford MacDonald
Center, Tampa, Florida.

1988   Poster presentation at the annual meeting
                   of the Florida Association of Behavior
                   Analysis, Orlando, Florida:

Decreasing Verbal and Physical Aggression and Increasing On-
Task Performance with DRO plus Time-Out. Michael J.
Priester, Mara Brad & Deloris Patterson, J. Clifford
MacDonald Center, Tampa, Florida.

                   Signature: _Michael J. Priester_