Assessment and the Modification of Decision-Making Behavior in Depressed and Nondepressed Students

by

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ASSESSMENT AND THE MODIFICATION OF DECISION-MAKING BEHAVIOR IN DEPRESSED AND NONDEPRESSED STUDENTS

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ABSTRACT

Mildly depressed and nondepressed university students received instructions designed to facilitate decision-making. The instructional treatments which were based on Nezu and D'Zurilla (1979) included (a) a comprehensive criteria rationale involving instructions in how to choose alternatives which maximize positive and minimize negative consequences (the general utility rule) as well as the evaluation of the aforementioned consequences; (b) an instructional package focusing solely on the utility rule and (c) a no instruction condition. The subjects choice behavior (choice of the most effective solution) served as the basis for the experimental evaluation of decision-making. Prior to training the depressed subjects had lower "effectiveness ratings" than did nondepressed subjects. However, following training with either the comprehensive criteria rationale or the general utility rule the effectiveness ratings of the depressed subjects was raised significantly beyond that of the depressed, no instruction controls.

A pre-experimental assessment of social problem solving ability was undertaken using the Means-End Problem Solving procedure (MEPS) developed by Platt and Spivack (1975). However, no differences as a function of group membership or depressive level were observed. In addition measures of latency indicated that depressed and nondepressed subjects did not differ in the amount of time engaged in the decisional process.

A number of self-report measures yielding additional information on the relationship between depression and cognitions indicated that problem solving confidence decreased as depression increased. Further, problem solving confidence increased as effectiveness scores increased. There was a general tendency for high problem solving confidence to be associated with more certainty that the choice made was the best one; more satisfaction with the choice and the perception that should they face the situation in "real-life" that it would pose little difficulty.

Taken together the overall pattern of results indicates that the experimentally manipulated decision-making strategies enhanced the effectiveness scores of depressed individuals. However, the more specific hypotheses that instruction in the CC rationale would be superior to the UP instructions was not supported. Nondepressed subjects were

expected to have higher effectiveness scores overall, however, this effect while initially present was diminished at posttraining. The results of the present study provide modest support for D'Zurilla and Goldfried's (1971) model of decision-making.

INTRODUCTION

Indecision is a common correlate of depression (eg. McLean, 1976). According to Beck (1967) the frequency of indecision increases in direct proportion to the severity of depression. Similarily, McLean (1976) has written that decision-making and problem solving are a frequent source of stress and frustration for depressed clients. Although McLean and Beck have both written about decision-making in relation to depression, these authors differ with respect to the to the explanatory status they assign to the construct.

Beck (1967) views indecision as a component of the cognitive manifestations of depression. He conceptualizes indecision to consist of two interrelated deficits, cognitive and motivational. The cognitive deficit is expressed as an anticipation of making the wrong decision. A person with such a negative expectancy is incessantly conflicted over even minor decisions since each time he/she considers a solution possibility it is expected to be wrong. This anticipated post-decisional regret leads to the motivational deficit which Beck calls "paralysis of the will", (eg., avoidance tendencies, and increased dependency). The patient has a lack of motivation to go through the mental operations required to arrive at some conclusion. Beck also

proposes that decision-making is burdensome to the depressed person, because it often commits the depressed person to an unpleasant course of action. As a result, routine problems become major problems for the depressed patient.

McLean (1976) proposes that depression is an unadaptive response to psychological stress. He differentiates between major "life-stress events", (eg. death of a spouse) which occur at a rate too low to allow one to develop a specific response strategy to minimize their stress impact; and "microstressors", which he defines as sources of small repetitive personal and social frustrations, for which there is usually ample opportunity for stress-reducing coping skills to be acquired. Whether a person becomes depressed depends on at least three factors according to McLean. These are (a) the degree, chronicity and pervasiveness of the stress experience; (b) the coping skills available to the person to cope with the stress experience; and (c) the nature and number of compensating positive experiences under his/her control McLean thus proposes that depression results from social and cognitive coping skills deficits.

Microstressors become potent sources of psychological stress by virtue of their cumulative effect and serve as precipitants of depression when the stress concentration becomes greater than a person's ability to cope according to McLean (1976). He identifies six sources of stress which involve areas of behavioral productivity, interpersonal com-

munication, goal setting, social interaction, decision-making and problem solving and cognitive self-control.

According to McLean, the decision-making process is assigned a causal role in depression. Beck on the other hand views decision-making deficits as epiphenomenal to depression. Both authors rely to a large extent on their clinical experience with depressives in relation to decision-making. Beck's contention that indecision is a consequence of depression and McLean's assumption that indecision and a general problem solving skill deficit underlie depression, are both reasonable, but few empirical studies have been directed in such a way that they could lend support to either position. Most studies have either been conducted to assess problem solving in general, or they have not focused their investigations specifically towards the depressed populations. In the following section I will review those studies which have focused on the decision-making and problem solving skills in depressed patients.

Problem Solving in Psychiatric Patients

Research investigating problem solving deficits in pathological samples has often utilized the Means-Ends Problem Solving procedure (MEPS), developed by Platt and Spivack (1975). The MEPS procedure involves the presentation of a set of stories depicting hypothetical "real-life" situations. Each story has a beginning, in which a need is

aroused in the protagonist and an ending in which the hero had succeeded in satisfying his need. The subjects are asked to provide a middle for each story. Several measures of problem solving are derived from this procedure.

"Relevancy" and "Irrelevancy" are the most commonly used measures of problem solving competence (Platt and Spivack 1975). A response that is story directed and described as an instrumental act which enables the subject to reach the stated goal is scored as "relevant". If however, the act described does not reach the stated goal, but some other goal, then it is scored as "irrelevant".

A consistent finding utilizing the MEPS procedure is that "maladjusted" subjects (eg., psychiatric patients; depressed individuals, juvenile delinquents) report fewer "relevant" means and more "irrelevant" means than their "adjusted" counterparts, (i.e., Platt & Spivack, 1972 b; Platt Siegal & Spivack 1974; Platt, Spivack, Altman & Altman 1974; Siegal, Platt & Peizer 1976; Gotlib & Asarnow 1979).

As a research method, researchers have used the MEPS procedure to define how various groups differ in their ability to generate a productive means to an end goal. Evidence suggests that psychiatric patients are less effective than normal controls in this task (Platt and Spivack; 1972 b). In addition, Platt and Spivack (1972 a) found that the ability to both address oneself to social problems and to provide the means to solve them were positively correlated

with social competency prior to the onset of psychiatric disability. This finding was based on administering the MEPS to 103 acute schizophrenic psychiatric inpatients. No training or treatment manipulations were performed in the aforementioned studies,

The ability to choose the most effective of a number of alternative solutions to a problem solving situation may not necessarily be diagnostic of psychopathology. Platt, Siegal and Spivack (1974) showed that when a number of "means" were presented for inspection, psychiatric patients (all major diagnostic categories being represented, schizophrenic reaction being the most common) were as efficient as normals in "recognizing" the relevant ones as were controls. However, "normals" were more adept at providing a valid rationale for having chosen a particular course of action. Psychiatric patients, consistent with previous studies, were deficient in that they generated less means of solving both personal and interpersonal problems than controls. Basically it seems that a problem solving deficit is not unique to depression, but is indication of disturbance.

Different problems may require different cognitive processes. For instance, Siegal, Platt and Peizer (1976) found that when I.Q. was partialled out, patients and controls did not differ on social problem solving ability. They found that emotional problem solving ability was related to intelligence, while social problem solving was not.

They suggest that emoticnal problem solving may require more abstract ability than social problem solving and that normals may need only social problem solving for adjustment.

Further, Gotlib and Asarnow (1979) found that there was a significant negative correlation between depression and interpersonal problem solving ability (as assessed by the Meps). However anagram performance did not differ significantly between the clinically depressed and nondepressed students. Correlations between the MEPS scores and anagram performance were low and nonsignificant. This supports the contention that different cognitive abilities (i.e. social but not non-social) are involved. There were no differences between the groups in the time required to solve the problems.

Attempts to Improve Problem Solving Ability

The studies using the MEPS procedure have identified deficits in problem solving in varied samples. However there have been few attempts to manipulate treatment conditions relevant to the remediation of the deficits. An exception to this is Coche and Flick (1975) who utilized a problem solving training approach. The approach involved (a) bringing up a problem, (b) clarifying the problem, (c) bringing up alternative solutions, and (d) discussing their feasibility. The subjects performance, pre and posttraining on the MEPS procedure was then compared. There was a sig-

nificant improvement in problem solving (an increase in the number of "relevant means" and a decrease in "irrelevant means") for both the experimental and control group, but not for the placebo group. While hospitalization alone was found to improve the patients functioning, the problem solving training enhanced improvement significantly. Hospitalization stays of the problem solving and the placebo (play-reading) group were considerably shorter.

Problem Solving and the Reduction of Depression

Problems solving training has not always been shown to be a clearly superior technique in terms of depression reduction. Coche and Douglas (1977) found that a play-reading group was as helpful as a problem solving group in reducing depression and general psychopathology. The experimental condition (problem solving) was more successful than the play-reading and control group in improving people's impulse control, self-esteem and feelings of competence, on self-report measures.

Hussain (1979) who compared the effects of problem solving training and social reinforcement of activity using an elderly depressed patient population, found that both techniques were associated with better adjustment (as assessed by the Hosptial Adjustment Scale, H.A.S.) and decreased depressive symptomology (as measured by the Beck Depression Inventory, B.D.I.). Cerniglia (1977) has found

significant differences between psychiatric clients who were counselled to make and implement independent decisions vs. clients who were counseled in self-management and a control group of no intervention, on the H.A.S. measure. While both of these studies report better adjustment (H.A.S.) there is a lack of direct assessment of problem-solving skills per se. Problem solving skills have not been demonstrably improved as a function of training, only mood and general adjustment.

A functional problem solving approach has been found to be more effective than a no treatment and an interest-support control group in reducing MMPI depression scale scores. Shipley and Fazio (1973) evaluated the effectiveness of the therapist recommending a mutually agreed upon set of appropriate actions to be attempted by the client before the next session. Results would then be reviewed with the client and a new set of recommendations would be made. While this procedure was found more effective, there was no assessment of the role of other treatment variables, such as the praise and/or criticism of the client, and/or the instructions to confine expression of depressive responding to designated periods when such behaviors would neither be reinforced nor punished. These features of the study may have reduced the MMPI depression scale scores as much as the treatment condition. Also, the clients were not specifically instructed to use "problem-solving" in an independent manner. Rather, it

was hoped that the client would develop a problem solving orientation, in an unspecified manner. The problem solving orientation of the subject was not however, assessed in the experiment.

While depressive symptomology has been reduced in most of the aforementioned studies, there has not been a clear relationship established between problem solving training and the subsequent reduction of depression. In addition problem solving has not been shown to be demonstrably superior to the other techniques with which it has been compared. To provide evidence that problem solving training is an effective technique research must begin to provide more direct assessment of the changes in problem solving abilities as a function of the training techniques. Research to date has rarely attempted this. Until this is done it is not possible to adequately assess the effectiveness of the problem solving procedures or techniques.

Decision-Making

Numerous studies have been conducted with nonpersonal problem solving tasks (e.g. anagrams, puzzles etc.). Although most of the "problems" in this research require a decision of some kind, decision-making has not been the focus of this research. Following an extensive review of the literature in this area Miller (1975) concluded that studies of psychological deficit in depression have generally failed

to demonstrate an impairment in functioning that is both well supported and unique to depression.

Evidence related to the fact that depressives do not respond in a deficient manner on nonpersonal tasks has been provided by Friedman (1964). He found that depressives performed more poorly on only 4% of the test scores (33 cognitive, perceptual, and psychomotor tests). This contrasted dramatically with their rating themselves significantly more negatively on 82% of the Clyde Mood Scale items. Friedman concluded that the actual ability and performance during severe depression is not consistent with the patients unrealistically low image of himself. One can also conclude that depressives perform as well as nondepressed subjects on tasks measuring nonpersonal problem solving ability, which thereby strengthens the arguement that one must assess responses to more personal "real-life" problem solving situations in depressed persons, if one wishes to identify deficits, even though we are still dealing with "hypothetical" problems.

Summary of Research

The studies which have been discussed can be differentiated into two categories: those which utilized personal or hypothetically "real-life" problems and those which used nonpersonal or "laboratory" problems. Both groups, have varied, in terms of the degree to which they have focused on

the identification of deficits in decision-making or in the more global problem solving process They tried to remediate specific forms of deficits only occasionally. They also have implemented a training process which are not neccesarily comparable (i.e. problem solving and play-reading). The former, (personal problems) have increased the relevancy to the subjects of the problem situations presented, in comparison to the latter (nonpersonal problems). While the MEPS procedure has consistently identified a deficit in problem solving, in general, the findings from both groups of studies are inconclusive.

Where problem solving training has been used, the results of increased problem solving ability and/or decreased depressive symptomology cannot be linked with clarity to the problem solving procedures used. The procedures have been broad and all encompassing and measures of improvement have similarily been vague and too heavily based on personality measures. Had the studies focused more on measuring specific changes on well defined problem solving tasks a more conclusive assessment could have been made concerning the relation between this variable and depression. In addition, problem solving training has not been demonstrably more effective in decreasing depressive symptoms than the other techniques with which it has been compared (i.e. social reinforcement of activity, play-reading). Although problem solving has thus far not been fairly evaluated due

to flawed methodologies in existing studies to provide evidence that problem solving training is an effective technique, research must begin to provide a more direct assessment of the changes in problem solving behavior as a function of the training techniques manipulated. Research to date has not defined the area precisely enough so as to measure these changes. Until we have more precise dependent measures we will not be able to assess adequately the effectiveness or validity of problem solving procedures and theory.

One approach to the study of problem solving would be to investigate individually the stages of which it is comprised. Decision-making is one of the more important stages of problem solving and one of the primary concerns in this thesis.

Statement of the Problem

Both Beck (1967) and McLean (1976) agree that decision-making is problematic for the depressed individual. As noted earlier, little research has been directed towards the this correlate of depression.

D'Zurilla and Goldfried (1971) have proposed a decision making model which combines utility theory (maximizing positive consequences and minimizing negative consequences) with consequence evaluation training. Under this model the expected utility of a given alternative is a joint function of

the value and likelihood of predicted consequences, and in addition, the model also provides certain specific criteria for evaluating the value and likelihood of particular outcomes. For instance, in evaluating outcomes, four categories were stressed: short-term, long-term, personal (i.e.,effects on oneself) and social (i.e., effects on others and the community).

In an evaluation of this proposal Nezu and D'Zurilla (1979) investigated the efficacy of a utility model for training in "real-life" decision-making. Within the framework of this model, decisions are based upon a careful assessment of the consequences of all possible solution alternatives. Three treatment conditions were compared: (1)Comprehensive Criteria (CC), where instructions were provided in the specific decision-making procedures and criteria described in the model; (2)Utility Rule (UR), where the subjects were simply provided with a definition of the general utility oriented approach to decision-making; and (3)No Instruction (NI): where, subjects were not given any formal instructions in how to go about making effective decisions. Subjects were given lists of alternatives for 12 stimulus problems and were instructed to choose the best alternative on the basis of the rule that they had been given. The mean effectiveness ratings for the CC group was 86.83, for the UR group it was 80.59 and the NI group obtained a mean effectiveness score of 76.56. A treatment main effect

was significant $F(2,50)=7.11$ $p.<0.01$ with the CC group being superior to both the UR and NI groups. The results thus supported the hypothesis that instruction in specific decision-making criteria would significantly enhance decision-making effectiveness.

Nezu and D'Zurilla note that their model predicts not only that individuals who use this method will average more effective sclutions, but also that as a group they should choose the most effective solutions for any given problem compared to others who do not use this method.

While this study was chosen as a basis for this research project, certain procedural alterations were implemented which were designed to refine and extend the earlier investigation. Nezu and D'Zurilla manipulated the decision-making strategies using groups of subjects in a classroom setting. While increasing ease of administration, this method severely restricts the number of dependent measures one can assess. In the present research subjects were tested individually in order to obtain additional information on (a) decision time (b) pre-decisional confidence (did the subjects feel they could solve the problem prior to viewing the alternatives); (c) post-decisional certainty (how certain the subject was that his choice was the "best" one); (d) decisional stress (how difficult did the subjects perceive the problem to be). In addition, a post-experimental questionnaire was presented to the subjects in an attempt to

(a) verify that they utilized the decision rule, (b) assess the appropriateness or inappropriateness of the rule, and (c) determine the degree of cognitive effort involved in the use of the rule.

Nezu and D'Zurilla gave "practice examples" of the decisional strategy the subjects were to use. This was done for the UR and the NI group, with these groups receiving two and three practice problems respectively. This method was used to control for the amount of time spent in the instruction phase of the experiment. The CC group did not have such an opportunity for practice. While the results indicated that the CC group selected the most effective alternatives, The relative effectiveness of this condition may have been even greater if the subjects in this group had received equivalent practice to those in the other groups. In order to eliminate this potential source of variation the practice problems were eliminated in the present study.

Nezu and D'Zurilla (1979) conducted their study with "normal" undergraduates. In contrast, in the present study the participants were identified as either mildly depressed or nondepressed on the basis of Beck Depression Inventory scores . This was done to assess the comparative abilities of mildly depressed and nondepressed students in decision-making and their responsiveness to the decision rules.

In addition, to determine the amount of change produced by the CC and UR instructions, the problems were divided

into two, six problem sets, with one half preceding the instructions and the other subsequent to instructions. The presentation of the two sets of problems was counterbalanced for each condition.

Nezu and D'Zurilla have develcped a procedure which may be usefully applied to the study of decision-making processes of mildly depressed subjects. The authors went to considerable trouble to develop stimulus problems and response alternatives and there is a need for research replicating the use of such problems within the area of problem solving. Other than the above noted exceptions and extensions, the Nezu and D'Zurilla procedure was replicated as closely as possible. Definitional components of their study are contained within the method section in more detail.

The following major hypotheses were formulated:

Hypothesis I:

Instruction in the comprehensive criteria rationale was expected to enhance both depressed and nondepressed subjects' ability to choose the most effective alternative. The comprehensive criteria should provide a more complete raticnale upon which to base a decision relative to the utility rule instructions which provided more minimal information and to the no instruction group who received no information on how to make their decisions. Support of this hypothesis would indicate that this decision-making rationale is capable of enhancing decisions of mildly depressed students.

Hypothesis II:

Nondepressed subjects in all treatment conditions were expected to have higher "effectiveness" scores than their depressed counterparts, thereby reflecting the general deficiency that depressives reportedly have in the decision-making process (eg. Beck 1967; McLean 1976).

Hypothesis III:

An interaction between instruction and depressive level was expected to occur with the prediction being that the depressed group would benifit more from instruction in decision-making than the nondepressed group.

Hypothesis IV:

Mildly depressed individuals were expected to emit fewer relevant means and more irrelevant means related to the MEPS procedure. Support of this hypothesis will reflect the general deficit in social problem solving abilities that depressed individuals have displayed in prior studies (eg. Gotlib and Asarnow 1979).

Secondary exploratory hypotheses were formulated and included the following:

Hypothesis A:

Depressed students were expected to have a longer latency period during the decisional process, reflecting as Beck (1967) describes as the tendency to mull over decisions and as McLean has noted as the tendency to worry over which of a number of alternatives to choose.

Hypothesis B:

It was predicted that depressed students would report to a more significant degree that they feel less able to solve the problem, prior to viewing the alternatives. This would reflect their general sense of efficacy in regards to problem solving situations.

Hypothesis C:

Mildly depressed students were expected to endorse a higher level of uncertainty regarding their choice of the best solution, than would their nondepressed counterparts.

Hypothesis D:

Mildly depressed students were also expected to report a higher level of post-decisional regret, reflecting as Beck (1967) describes as the fear of choosing the wrong option.

Hypothesis E:

Mildly depressed students were expected to endorse a higher level of stress related to the decisional process.

This study was designed to provide empirical evaluation of the utility of providing a specific decision-making rationale and the applicability of this procedure in the treatment of decision-making deficits in mildly depressed college students. Implications for clinically depressed individuals will need to be evaluated in the future, with appropriate clinical samples.

The secondary hypotheses were formulated to determine whether the factors identified by theory characterize the decision-making process of of depressed persons and to provide information concerning the potential of cognitive strategies.

METHOD

Overview

During a preassessment phase the subjects were categorized as depressed or nondepressed on the basis of Beck Depression Inventory scores. The subjects were also administered (prior to experimental manipulations) the Means-End Problem Solving procedure, (MEPS) which provided a measure of the subjects preexperimental level of social problem solving ability. Following this phase the subjects were scheduled for the experimental session which took place within a period of one week of the first contact with the subject. During the experimental session the subjects were randomly assigned to decision-making treatment conditions of comprehensive criteria; utility rule, and a no instruction group. The stimulus problems were presented to the subjects such that one half were prior to training conditions and the remainder were given following training. Dependent measures of "effectiveness ratings" derived from the subjects choice of the most effective alternative were obtained. Additional dependent measures of certainty, post-decisional regret, decisionl stress and efficacy as well as latency were also obtained.

Subjects

The 126 subjects were recruited from Introductory Psychology courses, at the University of Manitoba and Brandon University. Experimental credits were given to those who participated. The mean age of the subjects was 20 and the mean grade point average was 2.9, and the mean number of years that the subjects had spent in college was 1.3 overall. There were no significant differences between the treatment groups on these measures (see results section). The latter two variables were singled out by by Nezu and D'Zurilla (1979), to determine whether previous experience with similar or related situations, would account for the differences in abilities to make better decisions among the three treatment groups. This possibility appears to have been ruled out in the current study. In addition, the Means-Ends Problem Solving procedure provided data which was used to assess whether social problem solving ability was equalized among treatment conditions. Subjects were randomly assigned to treatment conditions to further control for subject selection biases.

Apparatus

A digital timer provided a measure of latency. The timer was allowed to continue running, with the experimenters noting the start and end time of the decisional process. The timer was completely silent and the subjects were unaware of being timed.

Procedure

Pre-Experimental Phase

Prior to the experimental manipulations, the subjects were given the Beck Depression Inventory (BDI) and the MEPS.

I. Beck Depression Inventory

The BDI was developed by Beck (1967) and has been shown to be a valid instrument for use in a college population by Bumberry, Oliver and McClure (1978). Also, while no overall sex differences have been found in degree of depression experienced by students, a functional analysis of the responses of the most depressed scorers has yielded a significant and interpretable sex difference in the pattern of symptom expression Hammen and Padesky (1977). Women were characterized more by indecisiveness and self-dislike. Because of this previous result the strength of the relationship between the sex of the subject and the degree of indecision as reported on the Beck Depression Inventory:Item M, was assessed via a Correlational analysis, see results section.

The subjects were asked to complete the inventory, as per the instructions which follow. A score of 10 and above categorized the subject as depressed; a score of 9 and below categorized the subject as nondepressed. This cutoff range is recommended for college populations, see Beck (1967). The Beck Depression Inventory (BDI) is contained within Appendix A for inspection.

Instructions to Subjects:BDI

The instructions have been adapted from those listed in Beck (1967). They are as follows:

"This is a questionnaire. On the questionnaire are groups of statements. I want you to read a group of statements and then I want you to pick out the one statement in that group which best describes the way you feel today, that is, right now. Be sure to read all statements in the group before making your choice. Continue, until all groups of statements have been responded to. To give your answer, just circle the number on the sheet which corresponds to your choice."

Appendix B contains an additional questionnaire which was designed to assess the severity and duration of past depressive episodes. This was administered in addition to the BDI, to assess the relation between problem solving and past depression. Subjects were given this form following the BDI.

II. Means-End Problem Solving procedure (MEPS):

A measure of social problem solving, adapted from Platt and Spivack (1975), was administered to the subjects prior to the second experimental session. Four problems were selected on the basis of high relevancy of the problem situation to a college population. Since time constraints were a factor in this study, the number of situations presented were reduced from a possible 10 to a more manageable 4.

The MEPS procedure involves the presentation of situations, each depicting a hypothetical problem in which a need is aroused in the beginning and where the need is satisfied in the conclusion. For instance, the situation might be a man and woman having a fight where one of them walks out...the situation is resolved and the subject is told they live happily ever after. The subjects task is to provide a middle for each story, or how the story is resolved. The stories developed by Platt and Spivack (1975), all reach a satisfactory conclusion. In this study the stories were altered such that two of the four stories to be presented were altered so they concluded in an unsatisfactory manner.

The subjects received a booklet which contained both the instructions and the stories, or situations. One situation was printed on each page, with the remainder of the page blank. This allowed ample space for the subject to write his response to the story. The responses were scored as closely as possible according to the guidelines established by Platt and Spivack (1975). Their scoring manual is available for inspection upon request.

Instructions to Subjects:MEPS

The instructions, adapted from Platt and Spivack (1975) were as follows:

"We are interested in your imagination. You are going to be given the beginning and the end of each of a number of stories. Your task is to make up the middle of each story."

The stories are thus presented and the subject describes the manner in which he/she would reach the end, as specified by the story. The means by which the subject would get to the end goal were scored in terms of relevancy, irrelevancy and a no means and a no-response category. Indications of the passage of time before reaching the goal were also tabulated (see dependent measures section for further clarification of these measures).

Procedure

Once the subjects had completed the BDI and had completed the MEPS procedure, they were given an experimental session time, convenient to them and their respective schedules. When they arrived at the second experimental session they were assigned randomly, to one of three treatment conditions. The experimentor did not have knowledge of the subjects level of depression at this time. Before commencing the experimental manipulations the subjects were reassessed on the BDI and were given a depressive adjective checklist to complete (DACL Form A). Following the completion of the experiment the subjects were reassessed on the latter measure using Form B of the DACL. Prior to instructions in the following decision rules, the subjects received six stimulus problem presentations, the remaining six were presented subsequent to the instructions in the decision rules. The treatment conditions, comprehensive criteria,

utility rule and no instructions were defined as per Nezu and D'Zurilla (1979).

Stimulus Problems and Response Alternatives

The stimulus problems (see Appendix D) and list of alternatives, (see Appendix E) were presented as Nezu and D'Zurilla (1979) had done with the exception that half of the problems were given prior to instructional training and half subsequent to training. In addition, in order to control for possible order effects the problems were presented in order 1 (problems 1-6,7-12) to 63 subjects and in order 2 (problems 7-12,1-6) also, to 63 subjects. The problems and alternatives were altered, such that they referred to Manitoba facilities and areas. The notations related to the effectiveness ratings, found at the end of each statement, were removed prior to presentation of the problems to the subjects.

A stimulus problem was defined by Nezu and D'Zurilla (1979) as "a real-life situation or set of circumstances to which an individual is required to respond if he is to function effectively, within his environment, but for which no effective response or solution is immediately available or apparent to the individual". Their definition of effective solution has been noted in the section dealing with the delineation of the comprehensive criteria treatment condition.

Nezu and D'Zurilla developed 12 stimulus problems with two of these having 18 alternatives, the remainder having 1-3 fewer alternatives.

Nezu and D'Zurilla presented a total of 15 problem situations together with their respective lists of alternative solutions to two 3rd year graduate students in clinical psychology for effectiveness ratings. Their task was to rate each of the alternative solutions for the 15 problems on a 9-point scale of effectiveness. The judges were not instructed in the detailed criteria for evaluating consequences but were given the basic utility rule for decision-making and the definitions of "effective solution" and "problem". The alternatives were first judged to be of high, medium and low effectiveness. Following this the alternatives in each category of effectiveness were ranked where 1, 2, 3, corresponded to "low effectiveness", 4, 5, and 6, corresponded to "medium effectiveness", and 7, 8, and 9 corresponded to "high effectiveness". Twelve problems met all criteria of agreement between judges and a range of effectiveness approximately equal in each category.

Pre-Training Instructions:

The following instructions were given to the subjects prior to their having had any training in the three treatment conditions.

"You will now be shown a number of problem situations. Accompanying each problem will be a list of alternatives, one of which you are to choose as the "best" or most effective. When you have selected the alternative you think is the best or most effective then state your choice outloud. Do not wait for me to be looking at you, I will be avoiding looking at you so as not to distract you. So remember to just state your choice outloud."

There will also be questions to answer throughout, just answer by circling the number corresponding to your choice. Pay close attention to the end points as they differ between the questions. The procedure will become clearer as we go through the first problem."

The questions referred to here correspond to the additional questions found in appendix F. They were designed to provide additional information regarding the nature of the decision-making differences between depressed and nondepressed students and to aspects of decision-making in general. In specific the subjects were asked to rate their initial level of confidence at solving the problem, their degree of certainty, post-decisional regret, or general satisfaction with the choice made and degree of stress or difficulty related to the decision process.

Treatment Conditions

I. Comprehensive Criteria:

This group received comprehensive instruction in the decision-making model, including a description of the general utility rule. In the Nezu and D'Zurilla study, an "effective solution" was defined as: " a course of action which, if properly implemented, would alter the problematic situation so that it is no longer a problem to the individual, while maximizing the positive consequences and minimizing the negative consequences, long-term as well as short-term, and social as well as personal consequences."

In evaluating consequences, Nezu and D'Zurilla (1979), stressed that the decision-maker should consider the long-term consequences as well as the short-term or immediate consequences of a particular course of action. Within these two categories (long and short-term consequences), the subjects were instructed to consider personal and social consequences, (i.e., effects on oneself regarding the former, and effects on others and the community as a whole, regarding the latter). Within the personal category, the following criteria were listed by Nezu and D'Zurilla: amount of time involved; amount of effort; emotional cost and/or gain; consistency with morals, ethics and other values; physical well being, and other idiosyncratic personal effects. For the social consequences, criteria to be considered included the effects on family, friends, and the community, and consequences such as standing in the community and reputation.

II. Utility Rule:

The subjects in the utility rule condition were given only the general utility rule for decision-making, as described in the definition of "effective" solution above. This group did not receive any of the instructions regarding the detailed specific criteria described above regarding the evaluation of the alternatives. This group was included to determine the effects of providing instructions in the specifics of the decision-making model, as compared to simply instructing the subjects to employ the general utility rule when making their decisions (i.e., choose the alternative that maximizes the positive consequences and minimizes the negative ones).

III. No Instruction:

This group was asked to "choose the most effective solution to each problem". They were not given any instructions on how to make their choice.

Dependent Measures:

I. Effectiveness Ratings:

The dependent measure used by Nezu and D'Zurilla (1979) was the effectivenss rating for the alternative that the subject chose as the most effective solution. The effectiveness ratings were described previously in the section on "Stimulus Problems and Response Alternatives". The unit of data

for each subject was the sum of the effectiveness scores on a pre and post training basis. The maximum score that a subject could obtain in total would be 106, since 10 problems had a maximum effectiveness score of 9 and two had a maximum of 8.

II. Additional Questions

The subjects were asked a number of questions designed to gain a greater understanding of variables which were felt involved in the decisional process. The questions are contained in Appendix F and were scored on a 7 point Likert scale. The first question was reverse scaled when scored such that low scores indicated high problem solving confidence, more certainty that the choice was the best one, more satisfaction with the choice made and the perception that the problem would pose little difficulty in "real-life".

III. Means-Ends Problem Solving Scores:

These scores are divided into the following categories by Platt and Spivack (1975): (a) the number of relevant means given by a subject in order to reach the story goal; (b) the number of irrelevant means contained in the story ; (c) no-means and (d) any indication of the passage of a specific amount of time before reaching the goal.

If the subject did not direct his response to the story as stated, or if he did not respond at all to a given story,

he does not receive a score for that story. If, however, the subject's response was story directed, it would be scored as a relevant means, an irrelevant means or a no means.

A relevant means was defined as any instrumental act that enabled the subject to reach the goal stated in the story, or to overcome an obstacle that prevented him from reaching that goal. More than one means can be scored for each story. If the subject gave a response that described some action on the part of the character which was instrumental in reaching not the stated goal, but some other goals, the response was scored as an irrelevant means. A no-means score was assigned to responses that (a) failed to specify in sufficient detail how the goal was reached, (b) simply repeated or paraphrased part of the story, or (c) made a value judgement on some aspect of the story. Time was scored if it was included as an element in the story and if the duration was, to some degree, specified.

For the two MEPS problems which were altered to result in a negative conclusion the above procedure served as a guideline.

IV. Latency Scores:

Depressives are generally thought to be characterized by slowness of responding, Miller (1975). Miller (1974) has reported that depressed college students were significantly

slower in solving anagrams than nondepressed students. Most tests of intellectual or decisional speed have relied on tasks which can be criticized for their lack of relevancy to the subject (i.e., anagram problems). Studies with depressed subjects have not previously measured "speed" of responding to stimulus problems with social or interpersonal relevance. Since Beck (1967) and McLean (1976) both suggest that depressed persons spend excessive time in the deliberation of alternative options, it seemed natural to measure this aspect of decision-making.

Post-Experimental Phase

Following the completion of experimental manipulations the subjects completed a mood inventory, (the DACL Form B) and a post-experimental questionnaire (see appendix g). This latter questionnaire was designed to gain information about aspects of the experimental methodology and instruction components.

Debriefing:

The subjects were told the following:

"This experiment has attempted to measure peoples' social problem solving abilities. What is unique about this experiment has been the use of problems which were relevant to "everyday life" rather than mazes and puzzles which some subjects have difficulty relating to. Through investigating

problem solving in this manner we may obtain some understanding of the decisicnal processes which guide peoples' behavior on a day to day basis. Thus by using these types of problems we are increasing the relevancy to the subjects and this in turn may allow us to say more about the problem solving abilities of people in general.

We have also been interested in how ones' mood affects the type of decisions we make. We ultimately hope to be able to provide better guidance to people who have difficulties making decisions through the results of this and future experiments of this nature."

RESULTS

Subject Characteristics

The characteristics of the sample are displayed in Table 1. The groups were well matched on the demographic variables (F's <1), with no significant differences occurring between subjects in the three treatment conditions nor between depressive level.

Insert Table 1 About Here

Depression

Beck Depression Inventory Scores

Level of depression was assessed through use of the BDI and the Depressive Adjective Checklist (DACL). The means obtained on the respective scales are presented in Table 1. The intercorrelations between these depression measures are presented in Table 2. Relative to the pretraining score, the posttraining Dacl score was more highly correlated with the second BDI score ($r=0.54$, $p<0.01$). Thus at posttraining then, the subjects tended to endorse more adjectives reflective of the depressive affect, measured by the BDI.

Insert Table 2 About Here

Modest negative correlations were found between the BDI scores and the subjects initial level of confidence ($r_s=-0.21$, $p_s=.01$) at pretraining and ($r=-0.27$, $p_s=0.001$) at posttraining. This indicates that increasing depression was associated with lowered problem solving confidence. Increasing BDI scores were associated with more uncertainty ($r_s=0.20$, $p_s=0.02$) at pretraining, however this effect was not evident at posttraining.

A positive correlation was also evident between depression scores and ratings of how difficult the situation would be in real life at pretraining ($r=0.33$, $p_s=0.0001$). However this relationship was not evident at posttraining ($r=0.12$, $p_s>0.05$). Level of depression and the subjects' satisfaction with his/her choice were negligible ($r's=<0.16$ $p>0.05$).

To determine if group assignment contributed significantly to the above correlations, further analyses were performed. Correlations were calculated between BDI scores and the additional questions for each group (CC, UR, and NI). There was a significant negative correlation for UR subjects for pretraining and posttraining confidence levels ($r's=-0.38,-0.44$, $p<0.01$). In addition, only the UR subjects' certainty was significantly correlated with Beck de-

pression scores ($r=0.36$, $p<0.01$) for the pretraining condition only, with the effect being reduced at posttraining.

Satisfaction with the choice made was not significantly correlated with Beck scores for any of the group assignments. The CC and the UR subjects' pretraining perceptions of how difficult the situation would be in "real-life" were significantly correlated with Beck scores ($r=0.37$, $r=0.44$, $p.<0.01$). Overall no consistent trend was noted regarding the above relationships.

To determine if the sex of the subject was related to the perceived ease of decision-making (as assessed by item M on the BDI) a correlational analyses was done. Results indicated that there was no significant correlation between these variables ($r=0.09$, $p>0.05$). Thus for this particular sample of subjects women were not characterized as being more indecisive as Hammen and Padesky (1977) had found.

The additional depression inventory (Appendix B) which focused on the occurrence of past depressive episodes and the symptomology expressed at that time was analyzed in terms of its correlation with the BDI. The resulting correlations ranged from ($r=0.12$ to 0.78) suggesting that the two scales are measuring, to some degree, the same emotional elements. The responses on the "Additional Depression Inventory" were not correlated with problem solving ability as assessed by the pre and posttraining effectiveness scores.

Dacl Scores

The depressive adjective checklist (DACL) was administered at the beginning of the experimental session and at its conclusion. The purpose was to determine if the subjects experienced an alteration of mood within the experimental session.

The mean Dacl scores for depressed and nondepressed subjects are depicted in Table 3 for all groups across pretraining and posttraining conditions. No pretreatment differences were found between the means of the treatment groups $F(< 1)$ nor across depressive level at pretraining $F(1,120)=1.80$, $p.>0.05$. At posttraining the treatment main effect did not account for a significant portion of the variance, $F(2,120)=1.00$, $p>0.05$, however, the main effect for depression indicated that depressed subjects had significantly higher DACL scores than the nondepressed subjects $F(1,120)=13.35$ $p<0.01)$. This suggests that by the end of the experimental session the mood of the depressed subjects had become more negative, whereas the nondepressed subjects remained more neutral in mood. The treatment by depression interaction was not significant $F=1.64$, $p>0.05$.

Insert Table 3 About Here

Effectiveness Scores

Each sclution chosen by the subject, as the best response to the problem, was associated with an "effectiveness score" as is discussed in more detail in the methodclogy section. The scores ranged from 1 (low effectiveness) to 9 (high effectiveness). The effects of the three levels of instruction on the level of effectiveness of the decisions made by the subjects was analyzed by a multiple analysis of variance. Figure 1 depicts graphically the mean effectiveness scores for depressed and nondepressed subjects on pre and posttraining measures.

Insert Figure 1 About Here

Nondepressed subjects in groups CC, UR and NI had pretraining mean effectiveness scores of 41.41, 42.03 and 41.42 and had posttraining effectiveness scores of 40.29, 39.58 and 40.46 respectively.

Depressed subjects in the pretraining condition, over the three treatment conditions obtained effectiveness mean scores of 41.53, 38.26 and 38.66; in the posttraining condition the depressed subjects had mean effectiveness scores of 40.53, 41.46 and 35.60 respectively.

Manova analyses revealed the absence of a treatment condition main effect at pretraining ($F<1$). Thus, prior to training the basic set of instructions given to the subjects

did not have any differential effect on the decision-making strategies utilized by the subjects. A significant depression main effect was indicated $F(1,120) = 3.77$ $p(<0.05)$. Nondepressed subjects, overall, had higher mean decision-making effectiveness scores at pretraining, than did their depressed ccunterparts ($X=41.64$ vs 39.48). The group by depression interaction was ncnsignificant $F=1.10$ $(p>0.05)$.

At posttraining there was a trend towards a significant treatment main effect $F(2,120)=2.60$ $(p=0.07)$ with the CC and UR treatment conditions having higher effectiveness sccres than the NI treatment condition. The main effect for depression was not significant, $F<1$. Of much greater importance however was the significant group by depression interaction on the mean effectiveness scores, $F(125)=4.09$, $p<0.01)$. A breakdown of this interaction revealed that the scores for depressed CC and UR subjects were significantly higher than the scores for the depressed NI subjects. In contrast, no differences were observed among any of the nondepressed conditions. Thus it would appear that the decision-making instructions were effective in improving decisions made by depressed subjects.

There was a tendency for Beck Depression Inventory scores to be negatively correlated with preeffectiveness scores ($r=-0.16$, $p.=0.06$) which indicated that the more depressed one was the lower the effectiveness of the decision. However, this effect was reduced at posttraining ($r=-0.05$, $p.>0.05$).

Additional Questions

The four questions, designated question A, B, C and D were designed to address different aspects of the decisional process. The questions asked the subjects (A) how confident they were at being able to solve the particular problem; (B) how certain they were that their choice was the best; (C) how satisfied they were with the choice they made and (D) how difficult the subject felt it would be to face that particular problem in "real-life".

The questions were scored such that high scores would indicate more confidence, less certainty, less satisfaction and more difficulty. The highest possible score which could have been obtained was 42 whereas the lowest would have been 7. It is important to note that the confidence question was reverse scaled for presentational continuity in the figures. However, for the correlational analyses, the scale was left in its original form, resulting in negative correlations.

The mean response to these additional decision-making variables are depicted in Figure 2. These figures depict the means for each question, for depressed and nondepressed subjects across training phase (either pre or post) and across treatment condition (group CC, UR, or NI). As can be seen the means are fairly close for both depressed and nondepressed subjects. However, in terms of treatment condition, there is a tendency for the UR and the NI subjects to rate themselves as being slightly less confident, more

uncertain, more dissatisfied and they also had the tendency to believe that they would have more difficulty with the problem if it were to occur in "real-life".

Insert Figure 2 About Here

In order to determine if the above variables (confidence, certainty satisfaction and difficulty) were related to the subjects ability to make effective decisions, correlational analyses were performed between the questions and the effectiveness scores for pre and posttraining conditions. Table 4 contains the resulting correlations.

Insert Table 4 About Here

Pretraining Correlations:

There was a mild tendency for high effectiveness scores to be associated with certainty, satisfaction and a perception of having little difficulty with the situation in real-life (r's=0.21, 0.22, 0.22, p. <0.05).

Low problem solving confidence tended to be correlated with less certainty, less satisfaction and the perception that the problem would be more difficult in real-life (r's=0.55, 0.43 and 0.58, $p<0.05$).

More certainty with the choice made was correlated with more satisfaction with the choice and less difficulty with the problem in terms of "real-life" perceptions (r's= 0.72 and 0.60 p.<0.05).

High satisfaction was associated with less perceived difficulty with the situation in real-life (r=0.51, p<0.05).

Posttraining Correlations:

The posttraining correlations were consistent with the basic trend described above. Post effectiveness scores were mildly correlated with variables of satisfaction and perceived "real-life" difficulty (r's=0.17, p.<0.05) A person making more highly effective decisions tended to have more certainty regarding their choice and a perception of little difficulty with the problem in real-life. There was no significant relationship between confidence and certainty with posteffectiveness scores.

A correlational relationship was evident between confidence and the variables of certainty, satisfaction and perception of difficulty, respectively (r's=0.62, 0.51 and 0.55, p.<0.01) at posttraining. High problem solving confidence was thus associated with more certainty, more satisfaction and less difficulty related to the problem.

As certainty of choice increased so too did the subjects' satisfaction and their perception of having little difficulty with the situation in "real-life" (r's=0.83,0.67, p<0.05).

As satisfaction increased, the subjects tended to report that they would have little difficulty with the problem if they were to experience it in "real-life" ($r=0.59$, $p<0.05$).

Further analysis revealed that significant F values existed only in regards to two variables. There was a significant difference found at pretraining and at posttraining in regards to satisfaction $F(2,120)=3.35,3.90$ $p<0.05$. A significant effect across depression was found at pretraining regarding the subjects' perception of difficulty in "real-life" $F(1,120)=3.87$ $p<0.05$). All other effects were nonsignificant.

To determine if group assignment accounted for the above results a correlational analyses was done using effectiveness scores (summed over 6 pre and 6 post trials) and the responses to the additional questions with the data sorted by group and by depressive level (Results are depicted in Table 5).

Insert Table 5 About Here

One of the more noteable correlations occurred for depressed subjects in the CC treatment condition. There was a fairly strong tendency for effectiveness scores to be associated with more certainty and more satisfaction ($r's=0.61,0.64$, $p<0.01$). There was a modest tendency for

higher effectiveness scores to be associated with the perception of less difficulty with the problem in "real-life" by the nondepressed UR subjects ($r=0.49$, $p<0.01$). There also occurred a fairly strong correlation between higher effectiveness scores and ratings of certainty and satisfaction for depressed NI subjects ($r's=0.54, 0.67$ $p<0.05$).

Latency

Table 6 contains the mean latency of the decision-making process for depressed and nondepressed subjects. Manova analyses performed revealed nonsignificant differences in latency periods in regards to treatment and depressed condition. Nonsignificant differences were found between the three treatment groups for pretraining and posttraining conditions $F(<1)$.

Insert Table 6 About Here

Post-Experimental Questionnaire

The post-experimental questionnaire indicated that approximately half the subjects felt that it was difficult to decide between the two or three best alternatives (50%). Despite this difficulty most subjects felt the choice was clear (66%). Approximately one quarter of the subjects (24%) reported feeling confused due to to the number of alternatives presented.

Most subjects felt the instructions were helpful (77%), and appropriate to the problems (84%) and were practical (80%). Few subjects felt that the instructions were hard to use (20%), Just over half the subjects felt they might use the instructions in the future (67%). A minor proportion of the subjects reported not using the instructions when making their decisions (8%).

Few subjects felt there was deception involved in the experiment, (13%). Subjects tended to think that the number of alternatives presented for each problem was a form of "trick" (i.e., "Trying to confuse me with the number of choices".) A relatively large number of the subjects were able to describe the instructions they had been given, (85%). No response accounted for (2%) of the subjects and innappropriate answers accounted for the remaining (13%).

MEPS

A total of 99 subjects completed the Means-End Problem Solving Test. This test assessed general social problem solving ability and was used to determine if the subjects in the three treatment conditions were of equal problem solving ability. The average number of relevant, irrelevant and no mean responses produced for the four stories are presented in Table 7.

Insert Table 7 About Here

Correlational analyses were performed between the Means-End Problem Solving Procedures and the following variables: age, gpa, yr, pretraining effectiveness scores and posttraining effectiveness scores. No significant relationships were found.

There were significant intercorrelations among the MEPS measures themselves. These correlations are presented in Table 8. There was a strong correlation between the total number of means generated and the overall relevancy ratio ($r<.84$, $p.=0.05$). A relatively strong negative correlation existed between the total number of means generated and the number of no mean responses identified ($r=-0.50$, $p.<0.05$). Also the total number of no means responses identified was negatively correlated with the relevancy ratio ($r=0.54$ $p<0.01$).

Insert Table 8 About Here

Analyses revealed nonsignificant F's (all < 2) for the total number of means generated and for the number of indications of time factors across group and depression level. There was a significant group effect $F(2,97)=4.09$, $p.<0.05$ for the MEPS measure of total number of irrelevant means generated by the subjects where the CC treatment condition subjects generated more irrelevant means than the other treatment conditions. In addition the total number of no mean responses resulted in a significant difference in terms of treatment condition $F(2,97)= 4.80$, $p<0.05$) with the UR and NI subjects generating more no mean responses than the CC subjects. The relevancy ratio however depicted no significant relationships across group and/or depressive level.

Table 1

Subject Characteristics

VARIABLE	NONDEPRESSED SUBJECTS MEAN (S.D)	DEPRESSED SUBJECTS MEAN (S.D)
AGE	20.31(3.78)	20.13(2.98)
GPA	2.92(0.55)	2.90(0.41)
YEARS	1.45(0.99)	1.29(0.59)
BECK 1	2.87(2.26)	11.59(5.35)
BECK 2	3.35(2.55)	13.44(4.58)
DACL 1	5.63(3.65)	9.10(5.09)
DACL 2	5.84(3.81)	9.80(5.10)
SEX		
FEMALE	n=47	n=27
MALE	n=34	n=18

Table 2

Intercorrelations of

BDI with DACL

	BECK1	BECK2
DACL1	0.15	0.20*
DACL2	0.49**	0.54**

*p<0.05

**p<0.0001

.sp

BDI= BECK DEPRESSION INVENTORY

DACL=DEPRESSIVE ADJECTIVE CHECKLIST

Figure 1: Mean Effectiveness Scores for all Treatment Conditions by Depression Level

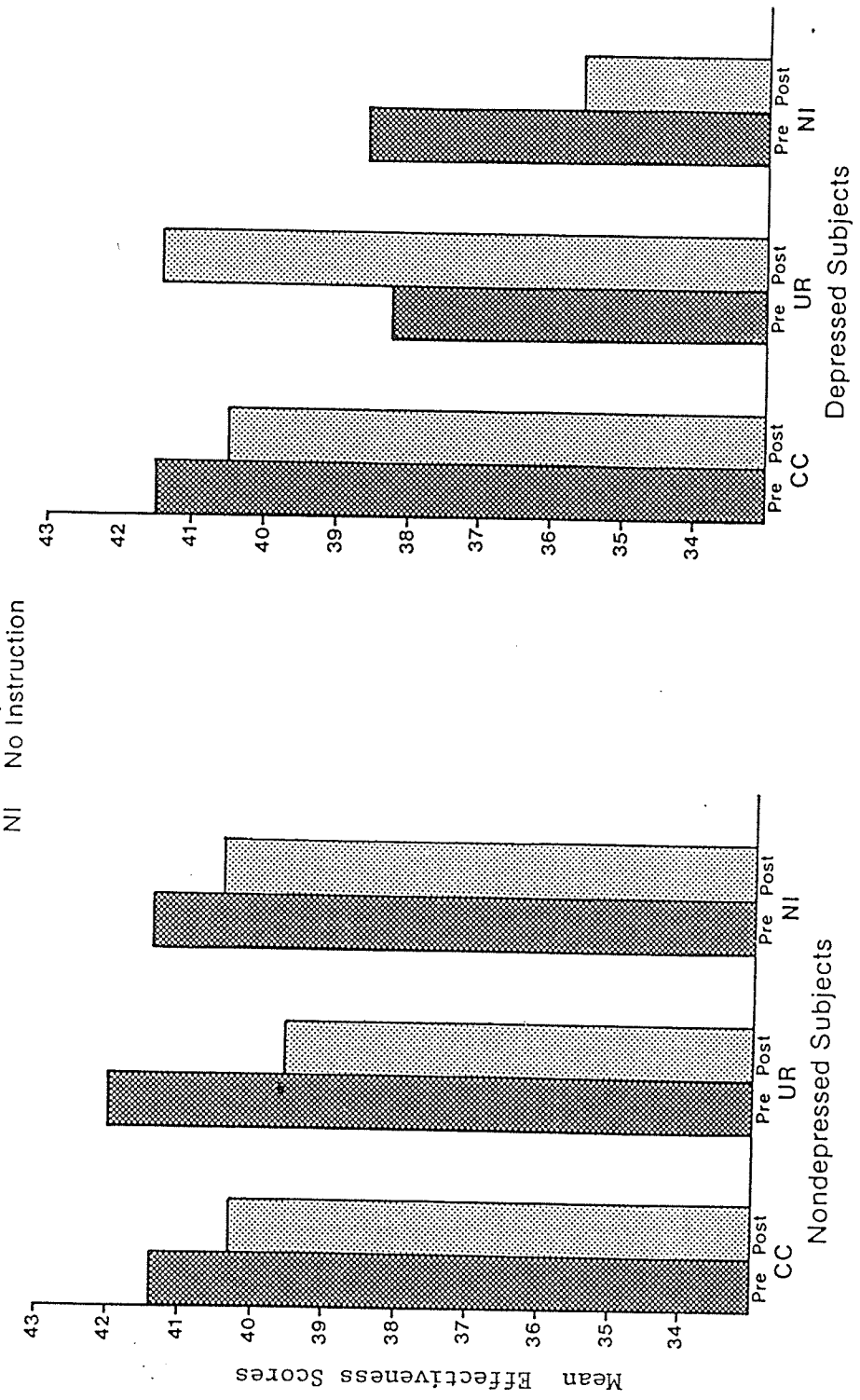

Table 3

MEAN DACL SCORES

	PRETRAINING		POSTTRAINING	
	D	ND	D	ND
CC	8.20	6.25	9.46	6.66
UR	9.73	8.79	15.13	5.51
NI	9.33	5.17	10.33	5.46

D=Depressed Subjects

ND=Nondepressed Subjects

CC=COMPREHENSIVE CRITERIA

UR=UTILITY RULE

NI=NO INSTRUCTION

Figure 2: Mean Response to "Additional Questions"

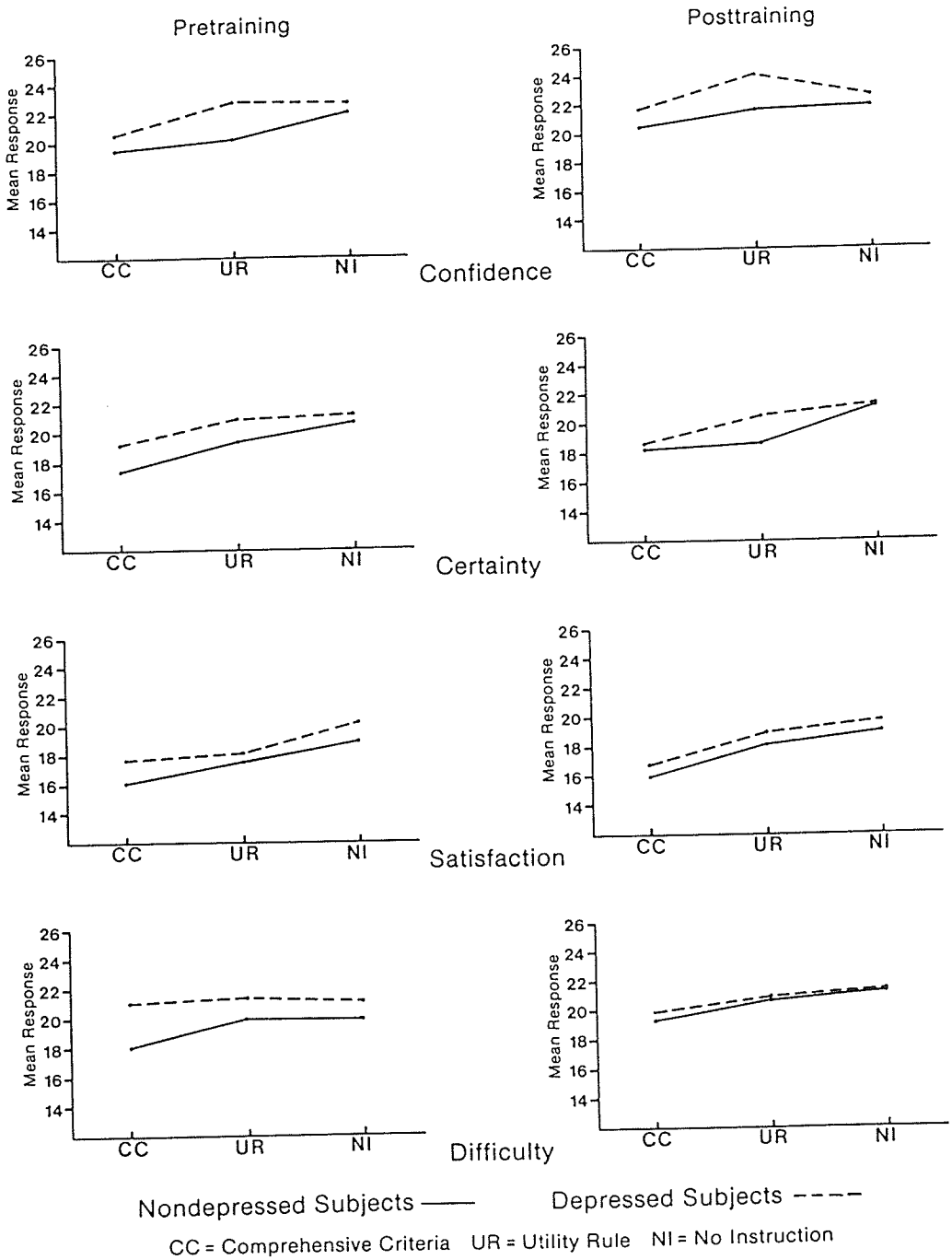

Table 4

Pretraining & Posttraining Correlational Coefficients of Self-Report Measures with Decision-Making Effectiveness Scores

	EFF	CO	CE	SA	DI
EFF					
PRE	1.00	0.10	0.21*	0.22*	0.22*
POST	1.00	0.04	0.14	0.17*	0.17*
CO					
PRE		1.00	0.55***	0.43***	0.58***
POST		1.00	0.62***	0.51***	0.55***
CE					
PRE			1.00	0.72***	0.60***
POST			1.00	0.83***	0.67***
SA					
PRE				1.00	0.51***
POST				1.00	0.59***
DI					
PRE					1.00
POST					1.00

*p<0.05
**p<0.01
***p<0.0001

EFF= EFFECTIVENESS
CO = CONFIDENCE
CE = CERTAINTY
SA = SATISFACTION
DI = DIFFICULTY

Table 5
Correlational Coefficients of
Effectiveness Scores with Additional Questions
as a Function of Depression Level and
Treatment Condition

Group(Depression)	CO	CE	SA	DI
COMPREHENSIVE CRITERIA				
PRETRAINING				
(ND)	0.24	0.42*	0.11	0.03
(D)	0.28	0.61**	0.64**	0.19
POSTTRAINING				
(ND)	0.08	0.14	0.31	0.15
(D)	0.17	0.20	0.49	0.09
UTILITY RULE				
PRETRAINING				
(ND)	0.21	0.10	0.20	0.49**
(D)	0.14	0.32	0.13	0.11
POSTTRAINING				
(ND)	0.22	0.11	0.16	0.33
(D)	0.45	0.29	0.31	0.32
NO INSTRUCTION				
PRETRAINING				
(ND)	0.02	0.0006	0.12	0.09
(D)	0.38	0.39	0.48	0.55*
POSTTRAINING				
(ND)	0.12	0.37*	0.43*	0.28
(D)	0.45	0.54*	0.67**	0.58*

*p<0.05
**p<0.01

ND=Nondepressed subjects
D =Depressed subjects

CO=CONFIDENCE
CE=CERTAINTY
SA=SATISFACTION
DI=DIFFICULTY

Table 6

Mean Latency Duration

for the Decision-Making Response

	GROUP	DEPRESSED	NONDEPRESSED
PRE-TRAINING	CC	388.06	432.58
	UR	379.00	409.93
	NI	407.33	422.50
POST-TRAINING	CC	447.80	488.41
	UR	423.00	434.96
	NI	419.53	452.82

CC=COMPREHENSIVE CRITERIA
UR=UTILITY RULE
NI=NO INSTRUCTION

Table 7

Mean Level of Responding to

The Means-End Problem Solving Procedure

	DEPRESSED n=26	NONDEPRESSED n=73
TOTAL MEANS	6.69 (2.67)	7.32 (2.55)
IRRELEVANT MEANS	0.65 (0.97)	0.54 (0.76)
NO MEANS	0.88 (0.87)	0.69 (0.70)
TIME ELEMENTS	1.15 (1.15)	1.57 (1.12)
RELEVANCY RATIO	4.40 (18.90)	2.15 (11.41)
+ STORY (MEANS)	3.44 (1.84)	4.40 (1.76)
= STORY (MEANS)	3.00 (1.56)	3.18 (1.49)
+ STORY (IRRELEVANT)	0.25 (0.59)	0.14 (0.48)
= STORY (IRRELEVANT)	0.39 (0.49)	0.39 (0.54)
+ STORY (NO MEANS)	0.25 (0.52)	0.13 (0.38)
= STORY (NO MEANS)	0.70 (0.66)	0.55 (0.60)

Table 8

Correlational Coefficients Between

Means-End Problem Solving Measures

	TM	TT	TIR	TNM	RR
TM	1.00	0.37***	-0.37***	-0.50***	0.84***
TT		1.00	-0.15	-0.14	0.31***
TIR			1.00	-0.18	-0.46***
TNM				1.00	-0.54***
RR					1.00

TM=Total Means

TT=Total Time

TIR=Total Irrelevant Means

TNM=Total No Mean Responses

RR=Relevancy Ratio

*p<0.05

**p<0.01

***p<0.001

DISCUSSION

The results indicated that the provision of decision-making strategies enhanced the effectiveness scores of depressed individuals. However, the more specific hypothesis, that the comprehensive criteria rationale would enhance performance for depressed and nondepressed subjects relative to the utility rule instruction was not supported. As Nezu and D'Zurilla (1981) have suggested, both the CC and UR treatment conditions may facillitate the decision-making process by emphasizing and prescribing a careful and systematic approach to the experimental task.

The second hypothesis, that nondepressed subjects were expected to have higher effectiveness scores than their depressed counterparts overall was not supported. Initially the depressed had significantly lower effectiveness scores than the nondepressed however by the end of training the depressed subjects who received instructions were not different from nondepressed subjects. This was not true however of the no instruction depressed group who were inferior to all other groups in post test. This reflects an interaction between depression and instruction in decision making. It may be that the depressed were more receptive to the instructions and more responsive to them in comparison to the

nondepressed subjects. The latter subjects may have felt confident that they could make their decisions as easily or as effectively with or without instructions, and therefore were less motivated to attend. This arguement is strengthened by the finding that high levels of depression were associated with low problem solving confidence for instance.

The exploratory prediction that depressed subjects would have longer latency periods for the decision making process was not supported. There were no significant differences found between depressed and nondepressed subjects on this measure and this is consistent with Miller's (1975) contention that the level of depression generally cannot be differentiated through latency measures alone.

Latency was also not significantly related to the subjects' perceived problem solving ability, to their satisfaction with their choice, or to their certainty that the choice was the best one. It was also not associated with the subjects' rating of how difficult the situation would be in real-life. The latency data do not generally support the claim that depressed individuals mull over their decisions and to worry over the possible consequences. (Beck; 1967 McLean 1976).

The secondary hypotheses involving the additional exploratory questions generally were only marginally supported. Although the depressed subjects had a mild tendency to be less confident about their problem solving abilities

than the nondepressed subjects, they did not feel significantly more uncertain about their choice of solution although there was a trend in this direction. The prediction that mildly depressed subjects would experience less satisfaction with their decision also received weak support, with only a mild tendency in the predicted direction. That depressed subjects did not report significantly less satisfaction with their decision is at variance with Beck's (1967) assertion that the mildly depressed relative to nondepressed individuals endorse a higher level of regret regarding their decision.

The correlational evidence indicated that in general, if confidence was strong then one's certainty, satisfaction and perception of having little difficulty with the problem in real-life were also heightened.

The failure to support a number of the above hypotheses causes one to question the role of these variables in the depressed persons decision-making process. It is important to remember however, that the subjects in this study were mildly depressed, but not clinically depressed. It may be that with clinically depressed patients these variables would be more likely to differentiate depressed and nondepressed individuals. The greater variability in decision-making effectiveness of the mildly depressed college student in this study may be a predictor of more severe disturbance in decision-making in a clinically depressed client.

The hypothesis of a generalized deficit in social problem solving abilities for depressed subjects, approached significance in the expected direction for the category of no means response. The overall relevancy ratio however, did not depict any significant differences between depressed and nondepressed subjects. Overall then, social problem solving ability was essentially similar for depressed and nondepressed subjects. Perhaps with more severe levels of depression the discrepancy in ability may be more evident. In general there was a trend for the depressed to have fewer relevant means, more irrelevant means, more no means responses and lower relevancy ratio's. significance was not found.

Some discussion is required to account for the results. A number of factors may be involved in the marginal success of the experimental manipulations. Overall the mean effectiveness scores of the current study closely paralled the means obtained by Nezu and D'Zurilla (1979) when looking at the "total" mean (i.e. pre and posttraining means combined). Due to the fact that the current study chose to obtain pretraining effectiveness levels on six of the problems, the power to detect significant improvement in decision-making as a result of training on the remaining six problems may have been more limited. Nezu and D'Zurilla (1979) in contrast, had the full set of 12 problems upon which to base their analyses.

Second, the problems were divided into the two groups of six on the basis of the number of alternatives provided for each. While this equalized the number of alternatives in each group, in retrospect, rather than use this criteria, perhaps an estimation of problem difficulty should be utilized. Problems were counterbalanced to attempt to control for problem difficulty, however this issue should be looked at more closely in future research.

Third, one must, in future research, determine the level of problem solving ability, prior to experimental manipulations more precisely. This may be aided by the development of a Problem Solving Inventory by Heppner and Petersen (1978). The inventory arrived subsequent to the commencement of the experiment and thus I was not able to include it in this experimental procedure. The PSI contains questions, presented on a Likert Scale format which assesses problem solving abilities according to the model proposed by Goldfried and D'Zurilla (1971). Its ease of administration and scoring will be an asset for use as a research tool.

Nezu and D'Zurilla (1981) note a failure to obtain a significant training effect in groups receiving both problem definition training and decision-making training instructions. They propose that perhaps the decision making deficit may not have been sufficient and in addition suggest that there may not have been a sufficient degree of ambiguity in the experimental problems for such differences to

emerge. These factors may also have been involved in the current study.

Subject characteristics of age, grade point average and number of years in college were distributed equally across the three treatment groups and thereby, could not have biased the subject's ability to make effective decisions. The subjects' social problem solving ability was also distributed equally across the treatment conditions using the relevancy ratio as a criterion measure. That no significant differences were found in general subject characteristics and overall problem solving abilities points out another factor, which relates to the aforementioned point made by Nezu and D'Zurilla (1981). That is when the subjects have relatively good problem solving skills to begin with, detecting significant improvements between different treatment groups is made difficult by virtue of a ceiling effect.

The results of the present study provide modest support for D'Zurilla and Goldfried's (1971) model of decision-making. This study represents an initial attempt to compare the decision-making process of sub-clinically depressed individuals as compared to their nondepressed counterparts. Importantly, this research has demonstrated that mildly depressed subjects can benifit, significantly, from instruction in decision-making. The results indicate that mildly depressed persons make more effective decisions if provided with rudimentary guidelines than if they receive no instruction.

Future research in this area should pay attention to the need to assess decision-making on clinically depressed samples; to quantify the difficulty level of the problems presented; to provide behavioral outcome measures and prior assessment of the clients' problem solving style and/or preexperimental problem solving abilities. As Nezu and D'-Zurilla (1981) note, decision-making as assessed by hypothetical experimental problems is flawed since it cannot be assumed that the subject would not be more careful and more systematic when confronted with a similar problem in "real-life".

DECISION-MAKING:THEORY AND RESEARCH

Decision-Making and Problem Solving

Decision-making is being studied in a number of disciplines, such as medicine, economics, education, political science, geography, engineering, marketing and management, science and psychology (Slovic, Fischoff and Lichtenstein, 1979). Decision-making is also subsumed under the heading of problem solving which encompasses various skills of which decision-making is but one. The area of problem solving has recieved enduring theoretical and empirical attention in the laboratory, but only relatively recently has this attention been directed in a more applied sense Mahoney (1974). Current research is attempting to demonstrate that the cognitive abilities involved in solving personal vs. impersonal tasks are qualitatively different (eg. Spivack, Platt and Shure 1976; Gotlib and Asarnow 1979). The investigation of the specific components of problem solving such as decision-making has also recently turned to the use of personal problem solving tasks (eg. Nezu and D'Zurilla 1979). In the following a delineation of the factors involved in decision-making and problem solving and the interacting features of the two areas will be discussed.

Problem Solving

Davis (1966) notes that the tasks found in the problem solving literature are diverse, from matchstick, bent nail, jigsaw puzzles, through to anagram problems, concept identification problems and arithmetic problems. Some indices even include some mental testing devices such as analogy problems and number-series problem solving. He further notes that it is almost definitional of laboratory problem solving experiments, that virtually any semi-complex learning task which does not clearly fall into a familiar area of learning can safely be called "problem solving".

How do we define "problem solving", an area which encompasses such a wide range of activities and areas? Skinner (1966) defines this term as "a question for which there is at the moment no answer". Davis (1973) refers to "problem" as a "stimulus situation for which an organism does not have a ready response". Through his definition he feels he avoids the connotations of verbal behavior by omitting the terms "question" and "answer". D'Zurilla and Goldfried (1971) define "problem" as "a specific situation in which a person must respond in order to function effectively in his environment". A situation is considered problematic if "no effective response alternative is immediately available to the individual confronted with the situation". These definitions are basically compatible in their agreement of a lack of availability of an effective response. The defini-

tions are also all encompassing however and do not delimit the area. D'Zurilla and Goldfried (1971) have delineated stages to the problem solving process which will be discussed shortly.

The term "solution", or creative idea, as per Davis (1973) is defined as a "new combination of existing ideas". D'Zurilla and Goldfried (1971) do not address "solution", but "problem solving" which they define as "a behavioral process, whether overt or cognitive in nature, which (a) makes available a variety of potentially effective response alternatives for dealing with the problematic situation and (b) increases the probability of selecting the most effective response from among these various alternatives".

The distinction, between overt and covert problem solving has also been emphasized by Davis (1966). He proposes that when, due to past experiences, the subject can associate outcomes or functions to the available response alternatives, he may solve some problems by covert behavior. This implicit responding consists of the sequential testing and rejecting of response alternatives until one response, or combination of responses, is rewarded by solving the problem. Observers often conclude that thinking, reasoning, or insight has occurred or that the subject possesses the necessary direction or functions. On the other hand, Davis proposes that when the subject cannot initially associate outcomes or functions to the available response alterna-

tives, then he must first acquire the necessary stimulus-response relationships by overt trial-and-error before the problem can be solved.

Noting the differences among individuals in the way they solve problems, D'Zurilla and Goldfried (1971) describe five kinds of operations or stages that they believe are involved generally in effective problem solving. These are: (a) general orientation, or set in approaching a problem situation; (b) problem definition and formulation; a definition of all aspects of the situation in operational terms, separating relevant from irrelevant; (c) generation of alternatives; a generation of all possible solutions to the problem; (d) decision-making; a choice from among the alternatives generated the best or most effective one to enact; (e) verification; or an assessment of the actual outcome of the alternative one chose to act on. They also note that in an actual problem solving situation the aforementioned stages overlap and interact with each other, and may not always follow the same order.

In the proposed research, the conceptual approach of D'Zurilla and Goldfried (1971) to problem solving was adopted. They have provided the most comprehensive definition of the area which is yet precise enough in terms of the stages of problem solving from which one can launch an experimental investigation. The following sections will attempt to define the area of decision-making, viewing choice behavior,

normative and descriptive models of decision-making and theoretical models (eg. conflict theory and utility theory). Research and methodological issues will also be presented followed by a summary and conclusion.

Decision-Making

Once a number of alternatives have been generated the individual is in the position where he must now select the most effective solution in accordance with the problem and numerous idiosyncratic values and variables.

It is imperative that the definition of decision-making must consider the role of choice. Choice behavior is the outcome of the decisional process. Choice behavior is also an area of psychology which has received considerable attention, both in the animal laboratory and in experiments with humans. Stiener (1979) has differentiated between three types of choice related to the human subject. Evaluative choice is experienced when the best available option exceeds the comparison level, (when the alternative about to be selected is more attractive). The greater the margin by which it exceeds the comparison level, the greater the feeling of choice. Little or no choice may be experienced when no alternative is as good as the individuals' comparison level. Due to the dependence on the individuals' evaluation of his/her best alternative, Stiener calls this form of choice, evaluative choice.

If two or more available alternatives are at least as good as the comparison level, people who want to maximize their benifits will probably compare one such acceptable alternative with another. Whichever option seems at the moment to be best is evaluated against the one that seems second best. When there is confidence in one's ability to discriminate between options discriminative choice is said to occur Stiener (1979).

Stiener (1979) also notes a third form of choice which occurs when two alternatives are both complex and differ from one another on several dimensions, where it is not immediately clear which is the better. To decide, comparison on each dimension involved occurs, wherein the dimensions are rated in terms of the importance (i.e., is color more important than texture of a garment to the individual). Here, the individual's idiosyncratic preferences guide the evaluation, rather than the obvious quality of the options, appears to determine the decision. This form of choice is referred to by Stiener as autonomous choice.

The investigation of the decision-making process by Nezu and D'Zurilla (1979), upon which this proposal is based did not attempt to assess whether or not the subjects actually perceived a "choice" in the alternatives presented to them. Future research could profit by focusing on the relationship between decision-making and perceived choice.

Decision-Theory

Normative and Descriptive Models

To describe guidelines for the selection of the most appropriate course of action D'Zurilla and Goldfried (1971) discuss decision theory. There are two general approaches, the descriptive and the normative models. The descriptive model concerns itself with the attempt to describe and predict the way in which individuals typically go about making decisions. The normative model, on the other hand, involves the specification of rules which one may follow in order to optimize the quality of decisions in specific situations, as well as to improve one's general decision-making ability.

A normative model is often proposed for a particular decision situation; experimental observation of choice which occurs may reveal discrepancies between normative and actual behavior. An attempt is being made to bring the normative theory and observed behavior into better agreement. Normative models are revised in this attempt toward making them more "descriptive" of the behavior actually observed (Lee, 1971).

The research strategy for the use of the normative model has also been to assume that the model is correct and accurately describes how people solve problems. The assumptions are evaluated by comparing human performance with the model's description of how people should respond. Evalua-

tion of the model involves accuracy (how closely does the model correspond to the behavior observed) and congruence (the degree to which the internal structure of the model is reflected in the internal structure of behavior) Barclay, Beach and Braithwaite (1971).

D'Zurilla and Goldfried (1971) have chosen to focus on the normative model's approach due to its delineation of guidelines to help improve one's decision-making ability and for the promise the model holds for the area of behavior modification.

Utility Theory

The process of determining the "goodness" of a decision has been defined in several ways. Heppner (1978) reports that the decision-maker (a) chooses the alternatives that have expected outcomes with the highest desirability (Dilley 1965; Edwards 1961) or (b) is internally consistent (Cronbach and Gleser, 1957) or (c) reaches a solution involving the maximum number of positive consequences and minimum number of negative ones (D'Zurilla and Goldfried 1971).

An important consideration in the determination of the optimal decision is the consideration of all possible consequences that pertain to the choice of each individual alternative. D'Zurilla and Goldfried (1971), devised a decision-making model which combines utility theory and consequence training. In their procedure, the estimation of consequenc-

es is subjective as there is no way the individual can actually "know" in advance the consequences of his actions. There are both long-term and short-term; social and personal consequences to be considered in terms of both their expected consequence and their estimated likelihood of occurrence (D'Zurilla and Goldfried 1971; Heppner 1978).

D'Zurilla and Goldfried (1971) have relied on utility theory for the formulation of their decision-making model. Utility theory involves a means-end conceptualization of decision making. The expected utility of any alternative may be arrived at by a joint consideration of the value of each outcome, as well as by the likelihood that the alternative will result in achieving this outcome. The utility model which most closely paralles human behavior, according to D'-Zurilla and Goldfried (1971), who cite Edwards (1961) in this regard, is that which involves a subjective estimate of the probability that each particular alternative will achieve any given outcome, as well as a subjective determination of the value of various outcomes.

The subjectively expected utility model of human choice implies that the utility of each aspect (values on a set of dimensions) should be weighted by the subjective probability of its occurrence when summing the utilities for an alternative according to Svenson (1979).

Utility models are graphical or mathematical models that can thus be used to transform a numerical description

of an item or an alternative, into a single number; the utility of that item or alternative according to Gustafson and Huber (1977).

Conflict Theory

Janis and Mann (1977) developed a conflict-model of decision-making. They assumed that stress, engendered by decisional conflict is frequently a major determinant of failure to achieve high quality decision-making. Decisional conflict refers to the simultaneous opposing tendencies within the individual to accept and at the same time to reject, a given course of action. Symptoms of such conflict are hesitation, vacillation, feelings of uncertainty, and signs of acute psychological stress (anxiety, shame guilt or other unpleasant affect) whenever the decision comes to the focus of attention.

Two major types of dilemmas people frequently encounter have been identified by Janis (1980). The first type occurs when people have already decided what is the best thing to do but feel too weak to excercise the self-control necessary to carry out their intentions. The second type occurs when a man or woman is facing a vital choice concerning marriage, career, health or life style and is in so much conflict that he/she cannot decide what to do.

Psychological stress arising from decisional conflict stems from at least two sources according to Janis (1980).

The decision maker is often concerned about social and material losses and may also recognize that his/her reputation and self-esteem and self-esteem losses as a competent decision-maker are at stake. Janis maintains that a major reason for many ill-conceived and poorly implemented decisions has to do with motivational consequences of decisional conflict, particularily attempts to ward off the stresses generated by an agonizingly difficult choice. A harrassed decision-maker is likely to suffer a decline in cognitive functioning as a result of the anxiety generated by the stress of being confronted with a task too complicated to manage, especially if serious losses are entailed.

Janis and Mann's (1977) analysis of the ways people cope with the stresses of making a vital decision emphasizes the tendency of people to short circuit the essential stages of search and appraisal when they become aware of undesirable consequences which may occur from whichever choice they make. They deceive themselves into thinking that they have conducted a complete information search after only brief contact with the problem.

Janis and Mann (1977) postulate that there are five basic patterns of coping with the stress generated by any realistic challenge that confronts a person with a vital choice. The coping patterns delineated by them are: (1) unconflicted adherance: complacently deciding to continue whatever he has been doing, ignoring information about the

risk of losses; (2) unconflicted change: an uncritical adoption of a new course of action, the one which is most salient; (3) defensive avoidance the decision-maker escapes conflict by procrastination, shifting the responsibility elsewhere, remaining selectively inattentive to corrective information; (4) hypervigilence: searches frantically for a way out of the dilemma and impulsively siezes upon a hastily contrived solution which may provide immediate relief, overlooking long-term consequences; (5) vigilance: searches painstakingly for relevant information, then assimilates the information in an unbiased manner and appraises the alternatives carefully before making his choice.

The defensive avoidance coping pattern appears most descriptive of what has been characteristic of the depressed, according to Beck (1967) and McLean (1976). That is, their descriptions of the depressed correlate well with what Janis (1980) has called defensive avoidance.

Janis (1980) has also defined the major criteria which can be utilized to determine whether a decision is of high quality. These criteria include: (1) the decision-maker thoroughly canvasses a wide range of alternative courses of action; (2) the decision-maker fully defines his objectives to be fulfilled and the values implicated by the choice; (3) the decision-maker carefully weighs whatever he/she knows about the costs or drawbacks and the uncertain risks of negative consequences, as well as the positive consequences re-

garding each alternative; (4) the decision-maker intensively searches for new information relevant for further evaluation of the alternatives; (5) the decision-maker conscientiously takes account of any new information or expert judgement to which he/she is exposed, even when the information does not support the course of action he/she initially prefers; (6) the decision-maker reexamines the positive and negative consequences of all known alternatives, including those originally regarded as unacceptable, before making a final choice; and (7) the decision-maker makes detailed provisions for implementing or executing the chosen course of action, with special attention to contingency plans that might be required if various risks were to materialize.

Failure to meet any of these seven criteria is considered to be a defect in the decision-making process. The more such defects are present before the decision-maker becomes committed, the greater the chances that he/she will undergo unanticipated setbacks and post-decisional regret, which make for the reversal of the decision.

Systematic data is not yet available on this latter point but it seems plausible to assume that "high quality" decisions, in the sense of satisfying these procedural criteria have a better chance of attaining the decision-makers objectives of being adhered to in the long run, (Janis 1980). It also seems reasonable to propose that depressed individuals will have more defects in the decisional process

which in turn will result in their experiencing more worry and concern prior to making a decision and their experiencing more regret over a decision once made.

Three conditions are considered essential for vigilant search and appraisal according to Janis (1980). These are: (1) the belief that serious risks may incur for whichever alternative is chosen; (2) belief that it is realistic tc be optimistic about finding a better alternative solution, to the objectionable ones being contemplated; and (3) belief that there is adequate time in which to search and deliberate before a decision is required. A person who is generally unresponsive to authentic information that promotes one or another of these beliefs would be expected according to Janis, to show a consistently defective coping pattern. This may result in a poorly worked out decision without adequate contingency planning and which may soon be followed by a reversal of the decision in response to acute post-decisional regret.

Relating the conflict-theory to depression and other personality disorders, Janis (1980) proposes that because of pessimistic expectations resulting from a chronic mood of depressive self-disparagement, the person will generally display a "defensive avoidance" pattern in the form of chronic procrastination shifting of responsibility to someone else, or will bolster the least objectionable alternative with rationalizations. This may involve denying and/or

minimizing the risks and interferes with plans that lead to stable changes in behavior.

Within this proposal an attempt will be made to assess (a) whether the stimulus problems will be rated as stressful by the subjects if they were actually confronted with them and (b) to what extent the subjects will report post-decisional regret, in the form of reporting less satisfaction with the choices made.

Based on Janis (1980) it will be expected that depressed students will report a higher degree of decisional stress and post-decisional regret than nondepressed students.

Research and Methodological Issues

While the intended outcome of D'Zurilla and Goldfried's (1971) model of decision-making, is more systemmatic and effective decision-making skills, Heppner (1978) has noted that little evidence exists which would suggest that specific training in judging alternatives increases one's ability to select better solutions. Spivack, Platt and Shure (1976) have criticized the model for relying on impersonal problem solving studies for the formulation of the model, and further believe that the "utility" of the model has not yet been empirically established.

On impersonal laboratory problems, decision-making skills can be enhanced via various training methods (eg.

Davis 1966). Dixon, Heppner, Peterson and Ronning (1979) however, note that there appears to be a lack of evidence, and even some negative evidence regarding the enhancement of students' decision-making skills on applied personal problems. This indicates the need not only for researchers to examine how people make decisions on applied problems, but also how counselors could be most effective in improving clients decision-making skills. Research has suggested for instance, that individuals are not always able to accurately identify the best alternative (eg. Johnson, Parrott and Stratton 1966; Arnkoff and Stewart 1975; Dixon et. al. 1979).

In the studies cited above training conditions which were designed to increase problem solving skills such as the generation of alternatives and decision making skills, have typically been manipulated. The tasks in the studies varied from the generation of plot titles of verbal, numerical and pictorial material, (Johnson ,1966) to familiar college problems (i.e. paper due the next day) in Arnkoff and Stewart (1975), and the use of laboratory tasks, (i.e. Missionairies and Cannibals)) as well as the use of simulated applied problems (i.e. changing a tire without a jack) Dixon et. al. (1979).

Johnson et. al. (1968) used a fairly extensive judgment training procedure. The subjects received three sessions, the first dealing with guidelines to use in the judgment

process. The subjects first learned these guidelines and then proceeded to the next session which involved presenting the subject with 14 triads of solutions, with the instructions to simply select the best solution. The third session involved stressing the contrast between superior and inferior solutions with 7 examples used. The subject was given 7 superior solutions each followed with blank lines for the subjects to write the characteristics of a superior solution. This was repeated for inferior solutions. The criteria for superior solutions varied according to task (i.e., (a) plot titles: clever, imaginative, creative or unusual; (b) table titles: comprehensive, includes important points concisely; (c) for conclusions: a valid generalization which integrates the tables as a whole; (d) sentences: reads smoothly; (e) cartoons: imaginative idea that fits the cartoon.

As the research involved four different experiments, the findings will be summarized. When subjects were instructed to write many solutions vs. one, the mean quality went down but the number of superior solutions went up. When asked to select his best solution the subject normally selected the one better than the others. Attempts to improve overall performance by three types of judgment training (individual, dyadic and tutorial) using the procedure described above were generally successful. A control experiment confirmed that improvement in judgment was due to

training and not merely to information about the criteria for good solutions. That the subjects did not always choose the best solution has been the most often quoted finding of the study (eg., D'Zurilla and Goldfried 1971; Heppner 1978). Researchers have attended less to the finding that there was improvement in the subjects general ability.

In the Arnkoff and Stewart (1975) study, following the generation of alternatives stage the subjects were requested to choose the best of the alternatives they had generated. The authors had used a modeling procedure as well as videotape feedback condition. The model would verbalize the processes involved (i.e., verbalizing how a specific alternative, met or did not meet the criteria established for the resolution of the problem). The criteria used were not clearly specified and appeared to be, from comments in the article, specific to the problem situation presented. Neither the modeling nor the videotaped feedback resulted in any significant improvement in the subjects choice of the best solution. The subjects would often choose an alternative which was lower in an effectiveness rating alloted by a judger of the alternatives. The authors criticize their methodology on the grounds that the training procedure appeared insufficient. Watching a model only once and receiving videotape feedback only once may have been insufficient training upon which to judge a method of training. The authors also note that the complicated procedure may have con-

fused some subjects. The comprehensiveness of the criteria upon which to base their decisions may also have been insufficient and too problem specific. Unfortunately the criteria are not described in sufficient detail to allow such a conclusion to be drawn.

Dixon et. al. (1979) assessed the effects of intensive problem solving training on outcomes related to counseling. Undergraduates who expressed a need and a willingness to participate in a problem solving workshop were randomly assigned to one of three groups: a treatment group, a pretest-posttest control group and a posttest only control group. Treatment consisted of didactic presentations, group discussions, and directed practice in five one and one-half hour sessions that were designed for systematic training in five stages of problem solving. Results indicated that training did influence the quality of responses, but training did not increase the number of subjects' alternatives generated. No differences were found among groups on their ability to make effective choices from among a set of alternatives.

Direct practice (individual assistance, cues, prompts, and verbal confirmation of correct responding) has been found to be more effective than nondirected practice (no assistance, experimentors only refected the subjects questions, no feedback), in facillitating the acquisition and transfer of the decision-making strategy employed by Evans and Cody (1969). In this study students were evaluated in

terms of whether, when making a decision they considered (a) alternative courses of actions; (b) the consequences of each alternative; (c) past experiences appropriate to the problem; (d) desirability of consequences accruing from alternate decisions; and (e) selection of a decision based on the considerations listed. The subjects verbally went through the decision process, in this way the experimentor could determine if the above considerations were being made. The criterion measure used to determine whether the students had learned the decision strategy, was a judgment by the experimentor, that the strategy was used, without prompting on three consecutive training problems. The degree to which the learned strategy transferred into similar and dissimilar situations was examined. A number of problems were presented for the training and testing conditions, 17 in total. There is however, no description of the problem situations used in this study. The subjects were also young, (8th graders). These factors create difficulty regarding the interpretation in that we are unable to classify the problems and age may be a factor which has influenced the results. There has not been sufficient research to determine the influence of age.

Other findings of the study included indications that sex was not significantly related to either the learning or transfer of the decision-making strategy. In addition, differences between oral and written uses of the required

strategy in similar and dissimilar settings were statistically significant, but not sufficiently so to allow for identification of the source of the difference. The study does indicate, that at least for high school, juniors, decision-making strategies can be taught.

A combination of anxiety management and problem solving resulted in significantly greater gains than either method alone, in regards to vocational exploratory behavior, awareness of career plans and problem solving behavior in a study by Mendonca and Siess (1976). Training consisted of practicing the problem solving stages of D'Zurilla and Goldfrieds' (1971) model of problem solving. The decision-making phase consisted of selecting a course of action and formulating a concrete plan of implementation. The training involved an audio-taped description of the rationale of the stage and presentation of a problem situation. Coaching regarding the appropriate response to the situation occurred. Group discussion followed this stage of training. The training sessions lasted approximately an hour and a half. The authors note that the training in problem solving skills alone, resulted in gains on analogue measures of problem solving skills only. This suggested to Mendonca and Siess that improvements in subjects' ability to solve hypothetical vocational problems and other situational problems symbolically may not necessarily transfer to their actual decision-making concerns. They suggest that this defect could have

been remedied by increasing the similarity of the stimulus situations used in training to the actual situations in real-life.

As a theraputic technique, problem solving should ideally represent a trained skill which when added to the clients' behavioral repetoire, should serve to aid in the solution of problems over the long term. The issue of maintenence was evaluated by Richards and Perri (1978). These reseachers evaluated problem solving techniques, as compared to faded counselor contact in relation to the clients' ability to maintain treatment improvements. Results strongly supported the claim of problem solving as an effective maintenence strategy. Follow-up at 6-week, 12-week and 1 year were favorable. The authors felt however, that the fading procedure should have been implemented for a longer period of time such that it would have had more probability of producing treatment maintenence. The authors advise continued use of the treatment procedure fading. Rapid deterioration occurred when there was an absence of either maintenence procedure. The subjects for the study were students who reported being "seriously" concerned regarding their academic underachievement.

The number of studies related to problem solving with particular emphasis on decision-making skills and which have utilized "real-life" problems , or at least appear to have utilized them, have been few in number. There are also

methodological problems such as suspected training deficiencies, both in terms of method and duration. Also the articles have not always clearly specified the stimulus problems used and/or the actual method used to train subjects. Definitions of components of problem solving have also at times, been less than adequately described. These factors make it near impossible to draw conclusions within the area. Future research is sorely required. The issues of concern, which would enhance our understanding of the area of problem solving will now be discussed.

I. Impersonal vs. Personal Problem Situations

Reviews of the area of problem solving are, first of all, not that recent (eg. Duncan 1959; Davis 1966; and Simon and Newell 1971; D'Zurilla and Goldfried 1971); secondly, these reviews have not referred to "real-life" problem solving tasks, but have focused only on "impersonal" laboratory tasks. The issue of using personal vs. impersonal problem solving tasks to measure a persons' abilities has been addressed recently (eg. Mahoney 1974; Platt and Spivack 1975; Spivack et. al. 1976; and Heppner 1978). Criticism has been levied against D'Zurilla and Goldfried (1971) for basing the formulation of their model of problem solving on the results of studies which have emloyed "impersonal" problem solving tasks. They have also been criticized for their lack of empirical investigation of the model they proposed.

Empirical evidence relating the model of problem solving to "real-life" is lacking (Heppner, 1978).

Experimental research in human problem solving has focused on conceptual skills and component processes, rather than on its adaptive role in a persons life. The influence of various factors, for instance, prior experience, instructions, varied forms of stimulus presentation have all been extensively examined. The tasks however have had very little relevance to, and are substantially removed from, everyday life as Mahoney (1974) notes.

Platt and Spivack (1975) note that the research generally considered in reviews of problem solving has been to determine and to measure cognitive styles. There has been a failure however, to differentiate between the abilities required for the resolution of a "water-jar" (impersonal) problem and a conflict with a friend (personal) problem.

Marks (1951) posited a somewhat circular argument regarding this issue. He notes that "personal problems have impersonal elements in that the subject knows that he/she is participating in an artificial situation, and impersonal problems have personal elements in that the subject may be dealing with an unfamiliar task in the presence of an unfamiliar person. In this sense then, the personal and impersonal problems can be seen to have some similarity."

In experimentation it is going to be difficult to create problem situations that are truly reflective of "real-

life" situations in that the emotional component will be absent. However, we can strive to make the situations as relevant as possible to the subject population of concern. The use of problem situations of a more personal nature will hopefully provide us with a better understanding of how people approach problem situations which occur in their lives.

II. Similarity vs. Dissimilarity in Problem Situations

In attempting to review the literature, it became very difficult to draw conclusions. The tasks, or problem situations utilized in the research have been greatly varied, and at times ill-defined. The variety has rendered the studies dissimilar in many respects. However, within most studies an attempt was made to make the problem situations used, relevant to the subject population of concern (eg. career decisions for high school students; problems related to undergraduate life for college students). Even with this attempt, some authors have expressed dissatisfaction in the degree to which they felt they had achieved this goal (eg. Mendonca and Siess 1976).

The research on problem solving using impersonal tasks has also been plagued with this problem. Duncan (1959) noted that the field of problem solving was poorly integrated. One of the reasons for this was the use of a great variety of tasks to provide problem situations. In nearly half of 100 articles reviewed by Duncan, the authors had devised

their own problems and none had been used by anyone else subsequent to the initial investigation. This diversity was noted by Duncan as being a serious obstacle for the systematic progress of the area.

The diversity of problems used in the research may reflect the youth of an area. The tasks involved in laboratory problem solving experimentation are now fairly standardized. Problem solving using "real-life" problem situations, is by comparison with the latter, relatively young. For the purposes of integrating the area there should be an attempt by researchers to begin using a common basis, the problem situations. In this way, we can begin to manipulate independent variables which have not yet been considered in the experiments thus far. In this way a more comprehensive and integrated understanding of the problem solving process and the factors which influence it may thus evolve. The problem situations, developed by Nezu and D'Zurilla (1979) which were designed to reflect the problems of undergraduate life, will be utilized in this study. By including the dimension of level of depression the findings of the Nezu and D'Zurilla article can thus be extended and will have, with continued research, implications for clinical populations.

III. Task Difficulty

Experimental findings from problem solving research involving "impersonal" problems has indicated that performance usually varies as a function of problem difficulty though the functional relationship is not always linear (Duncan, 1959). Certain difficult "insight" tasks, such as the pendulum solution of the two string problem, appear to be problems only because the situation evokes strong, though labile, response tendencies that do not lead to a solution (Duncan, 1959).

Experiments done in problem solving utilizing "real-life" problems have not assessed the role of problem difficulty. Increasing difficulty of personal problems may evoke more stress which in turn may result in deficient problem solving skills as Janis (1980) has suggested. Future studies should consider the subjects' perception of the difficulty of the problems presented to him/her. It may also be possible to manipulate the difficulty level more directly and assess the quality of the subjects solutions to the problems. Deterioration of effective problem solving skills may occur more rapidly under higher difficulty levels.

IV. Training of Problem Solving Skills

Training of problem solving skills has varied along three basic dimensions, (1) type of training (individual; group; workshop; modeling and videotaped feedback methods as well as practice and/or rehearsal of the strategies); (2) amount and duration of training (from one session to numerous and intensive sessions); (3) the theoretical basis upon which the training has been based has also varied.

There have been more attempts to empirically evaluate D'Zurilla and Goldfrieds (1971) model of problem solving in the more recent literature. However, some authors have modified the latter model, slightly, to reflect their beliefs as to what occurs in the problem solving process. Minor changes such as this make it difficult to then return to the model in question and assert that it does or does not fulfill the expectations placed on it.

It is therefore desirable, at this point, to work within the framework of a particular model, to utilize the training procedures appropriate to the model and to attempt to thereby identify the strengths and weaknesses inherent in the model. Only in this manner will we be able to add constructively to the model to improve its applicability. We will also be able to criticize more precisely the shortcomings of the model, making empirically justified improvement recommendations.

For the purposes of this research project we will utilize the decision rule advocated by D'Zurilla and Goldfried (1971) which has been based on utility theory. We will determine if this type of decision rule is applicable to both nondepressed subjects and subjects who report mild levels of depression.

V. Subject Variables

In research dealing with "impersonal" problem solving tasks numerous findings have been related to subject variables. For instance, children are more affected by amount of training than by difficulty level of the problems, whereas the reverse is true for adults; reasoning ability has been found related to most measures of problem solving performance on tasks of an impersonal nature; and anxiety level appears to have some relationship with subsequent perfcrmance though not necessarily linear. The effects of subject variables are not always limited to a particular kind of problem; their effects tending to be somewhat general. The findings of various studies, while detailed are difficult to relate either to each other or to the findings of other studies Duncan (1959).

In terms of research findings related to the aspect of subject variables where "personal" problem situations were used, there is little we can conclude at this point. There appears to be no sex differences, at least as far as 8th

graders (eg. Evans and cody 1969). Generally however this aspect has not been adequately assessed. There has been an attempt to obtain "motivated" subjects (eg. Richards and Perri 1978; Dixon et. al. 1979), though results have not been compared with "nonmotivated subjects".

Research related to the MEPS procedure, by Spivack and his collegues has found that subject populations who are considered to be maladjusted (i.e, psychiatric groups, juvenile delinquents) have consistently shown deficits in problem solving skills as assessed by the MEPS instrument. These subject groups generate fewer relevant sclutions to a problem sitation and more irrelevant solutions in comparison to "normal" subject groups.

The role of relevant past experience has not been adequately assessed. Some (i.e., Nezu and D'Zurilla 1979) have assessed such things as grade point averages, years in college and age to evaluate whether the groups used in the study were equated on these measures. The subjects performance as a result of varied past experiences has not been assessed.

Future studies should attempt to delineate relevant subject variables which may influence the problem solving process such that the findings can be adjusted to acccunt for these variables.

VI. The Issue of Generalization

Studies of "impersonal" problem solving abilities rarely attempt to generalize the findings to how a person would respond to a given real-life problem. The difficulty is that the problems used in the laboratory are so removed from everyday life, (i.e., they have little "ecological validity").

Studies dealing with "real-life" problem situations have seemingly assumed that training in problem solving techniques will automatically generalize to problems which occur in the "real-world". There is some evidence that the problem solving procedure is a more effective maintenence strategy (i.e. Richards and Perri 1978), however, the study was confounded by less than adequate training techniques on the alternative maintenence strategy of fading. In general there has been little attempt to either build in or measure generalization.

One possible reason for the absence of this data is that the problem solving strategy could be carried out covertly thus record keeping by the spouse of the client for instance, would not reflect the use of the problem solving procedure in this instance. There must be a greater attempt to develop methods to assess a subjects problem solving abilities in the real-world or to have follow-up measures, or some means of noting the recurrence of deficiencies in the problem solving ability.

Intuitively, it seems feasible to suppose that if the problem solving method is generalizing then clients would report a reduction in their presenting complaints such as anxiety, dissatisfaction in general and would report fewer problems in their daily living (i.e., getting along with their spouse, children etc.). To identify these improvements as being the result of problem solving training is more difficult. Future research may be able to provide evidence that due to an increase in problem solving skills the client can now independently deal with or cope with his/her problems with subsequent increases in self-esteem and decreases in self-disparagement depression and/or anxiety which were evoked by deficient problem solving skills. We need to be more certain, however, that changes in such personality variables can be demonstrably due to changes in problem solving ability. Changes in environmental events (i.e., becoming richer) or interpersonal relationships (i.e., getting married) may occur as a result of improved problem solving abilities (learning to make a wise investment decision; resolution of problems between two individuals such that marriage becomes desirable); or the changes, may occur independent of problem solving skills (i.e., winning the lottery; getting married due to pregnancy). We must be certain that the changes in problem solving skills have been a causative factor in improved psychological health. Generally contingencies will have to be set up to

insure that subjects use and are reinforced for using these strategies outside the laboratory or clinic.

Decision-Making and Utility Theory

Research related to decision-making which has employed the utility theory, as described earlier, and which has also focused on "real-life" type problems has been limited to one, to the authors present knowledge. This study was by Nezu and D'Zurilla (1979) wherein it was found that by instructing subjects in comprehensive criteria for the evaluation of alternatives, the subjects were able to choose to a significant degree, the most effective alternatives,. This was as compared to instructions only related to utility theory, and not consequence evaluation and as compared to a no-instruction group. Training the subjects only in utility theory was as effective as no instructions. This latter finding suggests that untrained individuals may utilize a form of utility theory in judging alternative solutions to a problem.

Evidence does suggest that decisions are affected by an individuals' aspirations and perceptions of the probability outcomes (e.g., Edwards 1961; Lewin, Dembo Festinger and Sears 1944), with an avoidance of situations that have a high probability of leading to unsuccessful outcomes (i.e., Chapman 1952,; Child 1946; Feather 1959).

Different decision rules may require different amounts of cognitive effort so that different types of rules may be ordered on an effort continuum. Decision-makers who want to minimize the amount of cognitive effort spent in a situation may tend to apply simpler rules before they try more complex rules Montgomery and Svenson (1976).

It is also, reasonable to assume that the importance of the decision probably affects the decision-makers tendency to use more complex and complete rules. The decision-maker, when he feels no information overload may seek stimulation by evaluating decision alternatives in greater detail using more complete rules (Svenson, 1979).

Svenson (1979) reports two main approaches to studying the cognitive processes leading up to a decision. The first is to perform what is called a structural analysis of the final judgments or decisions. The second approach is to employ process tracing techniques where data is collected during the decision-making process, as often as possible. Data typically analyzed in this manner are records of eye movements, and think-aloud protocols. Svenson noted a third type of strategy which simply gave the subjects instructions to utilize a given decision rule to obtain information as to which decision rule resulted in the choice of the most effective alternative (as indicated by a series of judges). This technique was used by Wright (1975) who instructed his subjects to use different decision rules to obtain informa-

tion about he degree of cognitive effort the rules required. While results were nonsignificant, regarding the cognitive effort question the use a given decision rule is viable. This is essentially what Nezu and D'Zurilla (1979) did. However, the question of cognitive effort was not assessed. This may be something to consider in future research.

Much of the research in decision-making evaluates the alternatives presented to subjects via a separate panel of judges (from two to four persons). The alternatives are evaluated in different manners, some judges being given the criteria for an effective decision as in Nezu and D'Zurilla (1979); others just simply judging the alternatives. By using the stimulus problems of Nezu and D'Zurilla the alternatives will already have been evaluated on the dimension of effectiveness. In experiments of this nature, it is difficult first of all, to create viable problems and secondly, to have them evaluated. By utilizing the problems of Nezu and D'Zurilla we will be able to provide some feedback, in terms of the additional dependant measures, of the suitability and validity of the problem situations.

While the studies reviewed have often judged the effectiveness of the alternative the subjects have chosen as the best, the criteria upon which the effectiveness has been based has not been clearly defined. Nezu and D'Zurilla are the exceptions to this. For this reason their methodology and stimulus problems have been selected for use. They have

approached the investigation of decision-making in the most systematic manner, as compared to the other studies reviewed.

It has been noted by Spivack et. al. (1976) and Heppner (1978) that D'Zurilla and Goldfried's (1971) model of problem solving requires further empirical investigation. The investigation began with Nezu and D'Zurilla (1979), albeit a delay of a number of years since the model was proposed. The investigation will continue with this present proposal.

The role of effective problem solving has been related to adjustment by Jahoda (1953) who noted that "one major tendency toward psychological health may be noted in the sequential tendency to admit to a problem, consider it, make a decision and take action." D'Zurilla and Goldfried (1971) similarily note that "much of what we view as clinically abnormal behavior or emotional distrubance may be viewed as ineffective behavior, and its consequences, in which the individual is unable to resolve certain situational problems in his life and his inadequate attempts to do so are having undesireable effects, such as anxiety, depression and the creation of additional problems."

Further investigation into the area of problem solving processes as are involved when one attempts to resolve "real-life" problems is an area of research which will no doubt lead to replication attempts in clinical populations such that the findings can be generalized to that popula-

tion. Further research will test the applicability and viability of the method proposed by D'Zurilla and Goldfried in relation to the clinical population.

In summary, there is much that is unknown in the area of problem solving, as related to "real-life" situations. We don't know for instance that personal vs. impersonal problem solving tasks are measuring different abilities, sufficient research is lacking.

We can draw few conclusions from the research due to dissimilarity of the stimulus problems. Training too, has been too varied, both in method and duration to allow for statements regarding the superiority of a technique to be made.

There is little that can be said, due to the tentativeness of most studies. There is a need for research of many different forms in this area. There are also important implications which could be made regarding problem solving therapy, should results begin to become more consistent in subsequent studies.

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Appendix A

BECK DEPRESSION INVENTORY

A)

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

B)

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

C)

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

D)

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

E)

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

F)

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

G)

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

H)

a) I don't feel I am any worse than anyone else.
b) I am very critical of myself for my weaknesses or mistakes.
c) I blame myself for everything that goes wrong.
d) I feel I have many bad faults.

I)

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

J)

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

K)

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

I)

a) I have not lost interest in other people.
b) I am less interested in other people now than I used to be.
c) I have lost most of my interest in other people and have little feeling for them.
d) I have lost all my interest in other people and don't care about them at all.

M)

a) I make decisions about as well as ever.
b) I am less sure of myself now and try to put off making decisions
c) I can't make decisions anymore without help.
d) I can't make any decisions at all anymore.

N)

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

O)

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

S)

a) I haven't lost much weight, if any lately.
b) I have lost more than 5 lbs..
c) I have lost more than 10 lbs..
d) I have lost more than 25 lbs..

P)

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

Q)

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

R)

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

U)

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

T)

a) I am no more concerned about my health than usual.
b) I am concerned about aches and pains or upset stomach or constipation or other unpleasant feelings in my body.
c) I am so concerned with how I feel or what I feel that it's hard to think of much else.
d) I am completely absorbed in what I feel.

Appendix B

ADDITIONAL DEPRESSION QUESTIONNAIRE

Name ----------

I.D.#----------

	No	Yes
1. In the past 3 years have you ever had a period that lasted at least one week when you were bothered by feeling depressed, sad, blue or down in the dumps, that you didn't care anymore, or didn't enjoy anything.	------	------
2. What about feeling irritable or easily annoyed?	------	------

IF YOU ANSWERED NO TO (1) AND (2) STOP HERE.

3. How long did this period (or periods, if more than 1) last?	----------
4. When did this occur? (give approximate month and year?)	----------
5. Did you take any psychological medicine?	------ ------
6. Did you act differently with people at work or at school?	------ ------

7. During that same time were you bothered by:

-change in sleeping habits? ------ ------

-trouble sleeping or sleeping too much?

-loss of energy, easily fatigued, or feeling tired? ------ ------

-loss of interest in usual activities or sex? ------ ------

-feeling guilty, worthless, or down on yourself? ------ ------

-trouble concentrating, thinking or making decisions? ------ ------

-thinking about death or suicide? ------ ------

-being unable to sit still and having to keep moving? ------ ------

-feeling slowed down and having trouble moving? ------ ------

Appendix C

MEANS-ENDS PROBLEM SOLVING BOOKLET

Instructions

We are interested in your imagination. You are going to be shown the beginning and the end of each of a number of stories. Your job is to make up the middle of each story. Complete one story before turning the page to start the next one.

Story 1

One day Al saw a beautiful girl he had never seen before while eating at UMSU. He was immediately attracted to her. The story ends when he gets a big brush off. You begin when Al first notices the girl in UMSU.

Story 2

H. loved his girlfriend very much, but they had many arguments. One day she left him. H. wanted things to be better. The story ends with everything fine between him and his girlfriend. You begin the story with his girlfriend leaving him after an argument.

Story 3

C. had just moved in to residence that day and didn't know anyone. C. wanted to have friends in residence. The story ends with C. having many good friends and feeling at home in residence. You begin the story with C. in his room immediately after arriving.

Story 4

John noticed that his friends seemed to be avoiding him. John wanted to have friends and be liked. The story ends when John seeks counseling because he continues to feel like such an outcast. You begin where he first notices his friends avoiding him.

Appendix D

STIMULUS PROBLEMS

Problem 1

To avcid possible arguement and resentment over the condition of your room, you and your roommate had the foresight to set up a cleaning schedule at the beginning of the semester.

Both of you worked on it together in order to make it as equitable as possible. Specifically, you agreed to take turns cleaning the room, alternating each week. Althcugh your roommate isn't as neat as you are and also has a very busy schedule, he/she has kept his/her side of the agreement quite well.

However, almost two weeks have gone by and your roommate still hasn't cleaned the room, nor has he/she said anything about it. When you remind him/her that it is his/her turn to clean, he/she tells you that he/she has been too busy with school work, and does not have time for "unimportant things". Realizing that you spend just as much time studying as your roommate does, you feel growing resentment about the fact that he/she has broke the agreement, and that your room is beginning to look like a pig sty. When you bring his/her attention to the prior agreement you both had made, he/she simply tells you that he/she is too busy with school.

You are thinking: "How can I get my roommate to maintain his/her part of the room clean-up schedule, yet still possibly avoid an arguement and resentment with him/her?"

Problem 2

You are the first person in your family to attend college. All through high school you did "A" and "B" work. As such, your parents had high hopes for your continued success in college, and you would often hear them boasting to the neighbors that you were going to "be somebody".

Although you thought that you could continue to pull good grades in your freshman year at the University of Manitoba, you realized very quickly that the situation here is much more competitive than in high school. Although you are working very hard, it appears that you will pull only a little better than a "C" average during your first semester.

While visiting your parents during the first semester, and discussing your academic performance, they appear to be very disappointed and concerned that you are only doing "C" level work. Even though you tell them you are doing your best, they insist that you can do better and maintain that you are probably not working hard enough.

You are wondering: "How can I overcome my parents disappointment about my current level of performance, even though I know I am doing my best?"

Problem 3

You are currently enrolled in an English composition class and have an important essay to write for class which is due Monday. Since this is a required course, you feel the need to perform rather well.

Since you find it relaxing to work at home, you have decided to go home and spend the weekend with your family, even though the bus ride back and forth does take a substantial amount of your time. It is Saturday afternoon, and you decided to begin work on this essay, since you have been putting it off all week. You also silently reprimand yourself for doing so, since the essay will probably take awhile to complete; and you also have about three or four hours of assignments for other courses to do this weekend in addition to the essay.

When you start to work, you realize to your dismay, that you have left an English book, which is essential for the completion of the assignment, back at school. You check with the local library and call the neighborhood book store, but you are unable to locate the book in these places.

You are thinking: "How can I maximize my chances of getting a good mark on this assignment?"

Problem 4

For as long as you can remember, you have felt nervous and uncomfortable when meeting people for the first time, especially members of the opposite sex. Because you prefer to avoid such feelings, you have tended to be reluctant to date and enter into new social situations.

When you first started to come to the University of Manitoba, you hoped that a new change of scene might help and that there would be more opportunities to make friends.

After a few weeks at the University of Manitoba, a friend invites you to a party and tells you that he/she wants to introduce you to a real nice guy/girl. You have previously seen this person in your anthropology class, and you remember thinking how nice it would be to know him/her personally. Therefore, you would really like to meet this guy/girl, but you are hesitant about accepting because you know that you will be very nervous at the time, and might possibly make a bad first impression by appearing awkward and tense.

You are wondering: "How can I eventually get to know this person and become less anxious of this situation?"

Problem 5

This is your first year at college and you want to become a psychology major. You have plans to further your education in graduate school and have a desire to become a professional psychologist. You are determined to get a good mark in your current introductory psychology class, because this is not only a required course for your major, but you also want to start out "on the right foot".

You have recently had your first essay test in one of your recitation/discussion sections, and have just been talking about the exam with a friend, who is also in the same section. When you get your paper back, you see that you have received a "C".

When you compare your paper with your friend, who had received a "B", you are surprised and somewhat upset to find that his/her answers were essentially the same as your own. You understand that these questions are the essay type where partial credit can be given, however you still feel that the grade was unfair. Yet you hesitate in asking your friend to use his/her paper to bring to the section leader, for fear of possibly having your friend's grade lowered.

You are wondering: "How can I maximize my chances of getting an "A" in this course?"

Problem 6

In the two months that you have been at the University of Manitoba, you have visited home only twice. You have limited your visits home because you have found it extremely difficult to get any studying done while at home. You are beginning to resent your parents' tendency to tell you what to do, and also, you increasingly prefer to spend your weekends on campus.

It is Thursday night and you realize that you have alot of studying to do, although it is not crucial that it should be completed immediately. Yet you know that if you don't do a substantial amount soon, you will be far behind in respect to the rest of your class; and your tests are not far away. Also, you thought it might be nice to go to the weekend movie tomorrow night, as your only respite from working.

You just received a call from your parents, and they tell you that they insist on having you visit more often. In fact, "why not come home this weekend?" You end the conversation with the promise to call them back the next evening to give them a definite answer. You don't want to hurt their feelings and they do control the purse strings. When you had previously mentioned to them your difficulty with studying at home, they reminded you that during high school, you appeared to have studied "quite well" at home.

You are wondering: "How can I continue to limit my visits home and yet make my parents understand my position?"

Problem 7

It is 7:00 P.M. on a Friday evening. You are studying in your room for an important Chemistry exam which will be given at 9:00 A.M. this coming Monday morning. You have concluded that you need about 5 or 6 more hours of concentrated study in order to be adequately prepared for the test, according to your study schedule.

After completing studying this evening, you plan to get a good night's sleep and wake up early the next morning to catch a bus home for the weekend. It is your father's 60th birthday and the family is giving him a party on Saturday night. Your mother wants you to come home as early as possible on Saturday to help with the arrangements. On Sunday, the family will be taking your father out to dinner at his favorite restaurant.

About one-half hour after you begin your studying, a loud party begins down the hall. Regardless of how hard you try to concentrate you can't because of the loud noise. When you think about going somewhere else to study, you remind yourself that you very much prefer to study in your room because you are most comfortable there and tend to do your best studying there more than anywhere else. Besides, the campus library is closed on Friday evenings.

You are wondering: How can I maximize my chances of getting a good grade on this Chemistry test and still be able to participate in the family celebration of my father's birthday?"

Problem 8

You are in your first year in college and have decided to take the pre-med program. You are determined to try your very best in all of your courses because you know that you will need at least a B-plus average, if not better, if you are to have a chance of getting into medical school in four years.

One of your most important courses this semester is a large science class in which there will be weekly quizzes and three major examinations. You are confident that you can get an "A" in the course if you work hard.

You are in your room after having taken the first quiz in this science course. You are concerned because you saw a number of other students cheating during the quiz and getting away with it, even though the instructor was walking around observing the class throughout the quiz. You noticed many different methods of cheating, such as the use of "crib notes", as well as copying off other students' papers. You also know that the instructor is going to mark on a curve in this course - that is, your grade will depend upon how your scores on the quizzes and exams compare with those of the other students in the class. You are afraid that the students who cheated on the first quiz will continue to do it without getting caught on the future quizzes and exams and, as a result, your performance might be downgraded.

You are wondering: "How can I maximize my chances of getting an "A" in this course?"

Problem 9

You are currently carrying a load of 19 credits, all of which seems to involve rather difficult course material. Since you want to be able to have a good chance at getting accepted in a graduate school, you feel the need to do academically well.

The semester is about half over, and you are doing all you can to keep from falling too far behind in your work. You find that you have a free evening, and you plan to get two labs written up which are due tomorrow. As it stands, you have to put off work in other courses to be able to hand these labs in on time, since they will probably take all night to complete.

As you get started work in your room, your girlfriend/boyfriend calls you up, says that she/he is feeling "rather down" and asks if it would be alright to spend the evening studying with you. Although you would like to be with her/him, you know that you will get very little accomplished studying with her/him, because she/he is quite "distracting" to you.

You are wondering: "How can I finish my lab assignments and still not hurt my girlfriend/boyfriend's feelings?"

Problem 10

You are currently living in the halls of one of the residential dormitories on campus. You don't have any close friends in the hall, since most of your friends live in other dorms, yet you seem to get along with your hallmates.

It is 11:00 P.M. on Tuesday night and your room is crowded with people carrying on a "bull session". The group consists of your roommate and several of his friends who live in the hall. You are not close with your roommate, but you have been getting along fairly well and would like very much to keep it that way to avoid unnecessary hassles in the future.

You have an early class the next day and would like to go to sleep, since the class is an interesting one. However, your roommate and his/her friends show no sign of leaving. In fact it seems there are more people joining in. Also, you had quietly asked them to leave an hour ago.

You are wondering: "How can I get to sleep and still maintain an amiable relationship with the rest of the hall including my roommate?"

Problem 11

You are one of a group of student leaders who currently are active participants in a volunteer program on campus. Students in this program volunteer their time and services in various mental hospitals by providing social activities to the patients.

In the past, a large number of the student volunteers were recruited from the introductory psychology courses by offering it as one alternative among several academic requirements, such as discussion sections or term papers. These particular students, together with others recruited via conventional campaigning methods, such as posters in the dormitories, and announcements in the student newspaper, comprised about 300-400 volunteers. However, the majority of this group were students from the psychology course.

Recently, restructuring of the course resulted in the elimination of the participation in this volunteer program as a viable alternative. Consequently, the entire program now becomes dependent totally on strictly volunteers, that is - participation in the program can no longer fulfill any type of academic requirement. In order to be as effective as you and the other student leaders of the program would like the social action program in the community to be, all of you feel that at least 200-300 students are needed to participate in the program. However, in the past the con-

ventional methods of advertisements have not been as efficient in obtaining new volunteers as you would have liked.

You are wondering: "How can we get more students to volunteer their time and services in this program?"

Problem 12

You have agreed to be a member of a student-faculty crime committee which has been formed to come up with possible alternative solutions to be presented to the university community for doing something to reduce the number of robberies and burglaries in the dormitories on campus.

Most of the thefts have been occurring when the person is out of his/her room during the daytime, in the evening, or during vacation periods or weekends. All kinds of possessions have been taken, including money, furniture, clothes, books, typewriters, radios, and stereos. It is not known whether the thieves are mainly students, employees of the university, or people from off-campus.

The problem presented to your committee has been stated as follows: "What can be done by the university community to reduce the number of robberies and burglaries in the dormitories on campus?"

Appendix E

ALTERNATIVE SOLUTIONS

The alternatives will be presented with the effectiveness score in brackets at the end of the statement.

Problem 1

"How can I get my roommate to maintain his/her part of the room clean-up schedule, yet still possibly avoid an arguement and resentment with him?"

1. Refuse to clean up anymore, just wait for him/her to clean and don't say anything else. (2)
2. Do the cleaning by yourself without arguing, hoping it will shame your roommate into helping. (1)
3. Ask your floor representative to talk to him/her. (3)
4. Call up your roommate's parents and ask them to encourage him/her to be neater. (2)
5. Ask his/her friends to encourage him/her to be cleaner. (5)
6. Bribe him/her with money to clean up with you. (4)
7. Write an anonymous letter to the residence director indicating the terrible time it is having a messy room on campus. (1)
8. Clean only those things in the room that belong to you, leaving his/her area dirty. (7)
9. Forbid your roommate to use anything of yours, until he/she begins to help clean the room. (8)
10. Sit down and have a "good talk" with your roommate about the problem. (6)

11. Help your roommate with his/her schoolwork, so that he/she will have time to clean. (5)
12. Hide all your roommate's belongings - he/she will have to clean the room to find them. (3)
13. Have your friends drop "hints" and comments to your rcommate about how dirty your room is all the time. (6)
14. Encourage your roommate to budget his/her time to include school work, cleaning and other activities. (7)
15. Spend most of your time out of the room. (4)
16. Clean up the room for your roommate, but do it when he/she is studying in the room so that he/she can't study. (8)

Problem 2

"How can I overcome my parents' disappointment about my current level of performance, even though I know I am doing my best?"

1. Copy the "A-students" notes and memorize them for the exam. (4)
2. Talk to the professors about changing the grading system in your classes in order to eliminate the curve so you will be graded on your performance rather than on a comparison. (1)
3. Get a private tutor to instruct you in the material. (7)
4. Speak with the professor about supplementary readings that could clarify the area you are having trouble in. (7)
5. Introduce your parents to a grade advisor who could clarify the difference between high school and college. (9)
6. Take as many self-paced courses as possible, since here your grade is determined strictly by your performance at your own pace. (9)
7. Stage an accident so that your parents will be happy that you are alive and less concerned about your grades. (1)
8. Tell your professors a "sob story" and hope that he/she has sympathy for you. (2)

9. Try to convince your parents of your increased efforts to improve your grades. (6)
10. Tell your parents that your courses are currently irrelevant to your career choice, so that they will not affect your chances of being "somebody". (4)
11. Explain to your parents that the level of competition is too difficult at the University of Manitoba. (5)
12. Encourage the university to send all parents of freshman, letters stating the academic contrast between the University of Manitoba and high school. (2)
13. Get some friends to help you study. (5)
14. Only take courses with "good" teachers. (3)
15. Only take courses that you really enjoy. (3)
16. Always attend every class for all your courses. (8)
17. Ask your parents to be patient, you may do better in later semesters. (8)

Problem 3

"How can I maximize my chances of getting a good mark on this assignment?"

1. Return to school, get the book and come back home. (5)
2. Try other bookstores and libraries not in your neighborhood. (8)
3. Call your roommate and ask him/her to drop the book off at your house. (2)
4. Ask your roommate if he/she could meet you half-way with the book. (3)
5. Try to do the report without the book. (4)
6. Do your other work at home and then go back to school to try to do the assignment there. (8)
7. Cut all your classes on Monday and write the paper then. (6)
8. Use a paper written by another who got an "A" last year in the course. (1)
9. Ask your roommate to write the paper since the book is back at school. (1)
10. Do the other assignments on the bus ride back to school Saturday afternoon and go get the book. On the bus ride back home finish the other work and begin to think about your paper. (7)
11. Forget the other work and use this time to go back to school to get the book and come back home again. (6)

12. Call up your teacher on Saturday afternoon, explain the situation and ask for more time. (5)
13. Go back to school immediately and do the assignment there and don't go back home. (9)
14. Go back to school immediately and do the assignment Saturday night and then return home again on Sunday. (3)
15. Write a paper on a different topic and explain the situation to the English teacher, see if he/she will accept the substitute paper. (2)
16. Forget the paper for the weekend and return to school Monday, finish the paper that week and simply hand it in late. (4)

Problem 4

"How can I eventually get to know this person and become less anxious of this situation?"

1. Initiate short interactions with this person, eg. ask him/her the time so that you can gradually "break the ice". (9)
2. See a counselor about this. (5)
3. Talk to your resident floor representative to see if he/she can suggest something. (5)
4. Take tranquilizers so you will be calmer. (2)
5. Sit close to this person in your anthropology class so you can get less nervous about being near him/her. (8)
6. Have a few drinks before you meet him/her so you will be more relaxed and talkative. (3)
7. Have your friend bump into him/her, causing him/her to spill his/her drink all over you - this way he/she will feel just as awkward as you when you first meet. (2)
8. Write a letter to an advice column, such as "Dear Abby" and ask for suggestions on what to do. (1)
9. Do some form of entertainment at the party he/she may enjoy, as well as others, and the compliments you receive will reduce your tension. (4)
10. Find out what his/her favorite colors are and wear clothes with these colors in them, that way they are sure to like what you are wearing. (3)

11. Before going to the party have a conversation with yourself about how silly it is to be so anxious with people. (3)
12. Before going to the party, make a list of desirable and undesirable traits to have, read it over until you know it fairly well, and then try to present the desirable traits at the party. (8)
13. Try sitting close to him/her in anthropology class to relax some tension so that when you eventually meet him/her, you will be able to talk with less anxiety. (9)
14. Ask to study anthropology with him/her. (7)
15. Walk next to him/her after class and suggest you both go for some coffee. (7)
16. Comment on how nice he/she looks on a particular day. (6)
17. Ask him/her in class if he/she will be going to the party and say you will see him/her there, that way your meeting will be anticipated. (4)
18. Buy an expensive new car and offer to give him/her a ride in it. (1)

Problem 5

"How can I maximize my chances of getting an "A" in this course?"

1. Tell your TA that you feel you deserve a "B" since someone else received one, but don't tell who. (6)
2. Find out if a grade on a paper can be lowered, and if not, then present both papers to the TA. (7)
3. Talk to the professor of the course about the problem. (8)
4. Speak to the chairman of the department about the problem. (5)
5. Discuss with your TA alternate ways of improving your course grade (eg. extra readings, extra reports, etc.). (9)
6. Speak to your TA and tell him/her about your desire to go to grad school and that a "C" could severely limit your chances of being admitted. (5)
7. Threaten the TA with physical harm if he/she doesn't change your grade. (1)
8. Try to get better acquainted with your TA so he/she will grade your future papers more favorably. (4)
9. Request that all future tests be graded on objective tests rather than on papers/essays. (6)
10. Request that all future tests be oral exams. (3)
11. Cheat on the next essay test. (2)
12. Bribe the TA for the answers for the next test. (1)

13. After receiving the paper back, add more info to the already graded paper and re-submit it for a regrade. (2)
14. Pay another student to take the tests for you. (3)
15. Study only for this course, including your previous free time. (4)
16. Study with a student who has received an "A" on the first test. (9)
17. Go to the professor or TA during their office hours for extra help. (8)
18. Read extra, but related books for the course. (7)

Problem 6

"How can I continue to limit my visits home and yet make my parents understand my position?"

1. Tell your parents that "group studying" is more effective for attaining higher grades and at home you would not be able to do this. (7)
2. Prove to your parents that studying at home will hurt your academic record - show them two papers, one in which you did well on (a paper you wrote at school) and one you did poorly on (a paper which you wrote at home). (6)
3. Tell your parents that college is much more difficult than high school and that you now need to concentrate more on your work and that the home environment is too noisy and distracting. (8)
4. Make plans to go home, but at the last minute arrange a situation that prevents you from going, so that your parents think you sincerely wanted to come home but that it was beyond your control (eg. you got sick). (4)
5. Tell your parents to visit you at the campus for a couple of hours on the weekend. (8)
6. Have your resident representative speak with your parents and explain the importance of being at school on weekends. (2)

7. Ask your parents' friends and neighbors to tell them how silly it is for you to come home as frequently as they would like. (6)
8. Get your parents more involved in the community so they would have less time to see you. (3)
9. Have other students explain to your parents how important it is to be on campus on the weekends since it is the best place to get work done. (5)
10. Tell your parents that all your books you need to study are in your dorm room and it is inconvenient to constantly transport them around. (3)
11. Tell your parents that you need to have access to the University of Manitoba's library on weekends to study efficiently. (9)
12. Encourage the university to send letters to all undergraduate students' parents stating that the students need weekends on campus to enhance their learning experience. (1)
13. Drop out of school and continue to live with your parents. (1)
14. Go home on weekends but study so much that your parents won't appreciate your presence anyway. (4)
15. Explain to your parents that you will be able to spend only extended weekends, vacation periods and the summer home, and hope that that is enough. (9)

16. Explain to your parents that living away from home makes you miss them so much that when you are home you can't concentrate on school work, you must talk to them so you can't study there. (7)
17. Insist that they buy you a car if they want you to visit. (2)

Problem 7

"How can I maximize my chances of getting a good grade on this chemistry test and still be able to participate in the family celebration on my father's birthday?"

1. Ask the party members to please move somewhere else. (3)
2. Ask the party members to party at another time (eg. in another 5-6 hours). (2)
3. Try to study in a friend's room that night. (5)
4. Go to the party, temporarily forget about studying and then when the party is over study. (4)
5. Go to sleep and study when the party ends (before you leave for home). (5)
6. Stop studying that night, go home for the celebration on Saturday, but come back to the campus on Sunday (miss the celebration at the restaurant). (4)
7. Plan to cheat on the exam so you won't need the time to study and you can go home for the weekend. (2)
8. Try to get the whole party to study for the 5-6 hours and then allow them to continue the party afterwards. (1)
9. Go to a study lounge in another dormatory to study. (9)
10. Stuff cotton or earplugs in your ears so that the noise from the party won't distract you. (8)

11. Ask the people at the party to be a little quieter. (6)
12. Talk to your resident floor representative and explain your predicament, have him/her speak with the people causing the disturbance. (3)
13. Break into the library and study there. (1)
14. Ask another person to help with the arrangements on Saturday so you could use this time to study. (8)
15. Make another study area resemble your room so that you will be able to do just as well studying there. (9)

Problem 8

"How can I maximize my chances of getting an "A" in this course?"

1. Inform on the particular students who are cheating. (4)
2. Organize all the non-cheaters in an effort tc stop the others from cheating. (3)
3. The non-cheaters should point out the cheaters to the instructor when they are cheating during the exam. (2)
4. Have the non-cheaters help the cheaters in their course work so they won't have to cheat. (2)
5. Go to the TA and find out what additional material you could use to better prepare for the exams. (7)
6. Have the instructor explain that anyone caught cheating wll get an "F". (4)
7. Cheat along with the others. (3)
8. Suggest that the test not be marked on a curve since it hurts the honest students. (5)
9. Alert the committee on Academic Standing to the problem and petition them to enforce academic honesty. (6)
10. Have the test administered to a small group of students in a small room so that cheating will be impossible. (5)

11. Study longer for future tests. (8)
12. Make sure you have read all the material twice. (8)
13. Study with friends and have a question and answer period. (9)
14. Ask to do extra credit work. (6)
15. Attend all classes and recitation sections. (7)
16. Break into the professor's office and fix your grade. (1)
17. Bribe the cheaters into stopping. (1)

Problem 9

"How can I finish my lab assignments and still not hurt my boyfriend/girlfriend's feelings?"

1. Invite him/her over with the condition that you can't talk with him/her until you finish your labs, at which time you can do something together. (5)
2. Have him/her come over and see why he/she is down and try to resolve this so he/she doesn't need to be with you then you can go back to your studies. (8)
3. Distract your boyfriend/girlfriend that he/she will want to leave. (3)
4. Ask him/her to do a very important favor that will require enough time for you to finish your work. (5)
5. Tell him/her that you promised to help someone with work tonight. (6)
6. Have your boyfriend/girlfriend come over - then stay up all night after he/she leaves and finish your work without sleeping. (7)
7. Tell your boyfriend/girlfriend that your roommate doesn't want anyone else in the room tonight and that you can drop by his/her place for a short time. (6)
8. Go seek advice from your resident floor representative. (4)
9. Pay the TA of the lab course to do the lab for you. (1)

10. Explain to your boyfriend/girlfriend that you aren't feeling well and are planning to go to sleep now. (4)
11. Explain the situation and ask him/her to meet you tomorrow. (7)
12. Try to cheer him/her up on the telephone to get him/her out of the "down" mood. (8)
13. Tell him/her that your parents are about to visit and they don't like "boys" or "girls" in the room. (3)
14. Tell him/her that you are about to leave to go home. (2)
15. Tell him/her to come over, but you leave to do the labs elsewhere. (1)
16. Tell him/her to come over, but ignore him/her until you complete your lab assignments. (2)

Problem 10

"How can I get to sleep and still maintain an amiable relationship with the rest of the hall, including my roommate?"

1. Try to go to sleep with everyone still in the room. (3)
2. Go and pull the fire alarm so everyone will leave the room. (1)
3. Ask your roommate privately if he/she could lead the discussion into another room and talk there. (9)
4. Tell your hallmates that you indeed like them but that you get claustrophobia when so many people are in the room. (5)
5. Cause a major distraction outside the room so people will leave. (2)
6. Ask them to talk quietly and whisper. (8)
7. Tell your hallmates that if you start screaming in your sleep they should not be alarmed because you always have nightmares when you hear people talking when you go to sleep. (4)
8. Go to one of your friend's rooms and spend the entire night there. (5)
9. Cry to your roommate so he/she will feel bad that he/she kept you up and will then ask his/her company to leave. (4)

10. Scream at your hallmates to leave and the next day apologize and tell them that you only act that way when you don't get enough sleep. (6)
11. Play music very loud so that they can't hear each other and will leave. (3)
12. Ask the resident floor representative if he/she can designate a room for such "bull sessions" to be held. (2)
13. Explain to them that you want to sleep because you have an early class that is too interesting to miss. (9)
14. Speak to your roommate and suggest a room switch with someone similar in sleeping habits. (7)
15. Go to the infirmary telling them you don't feel well and that you need a good night's sleep there. (7)
16. Try to stay up all night with the others, go to all your classes and sleep tomorrow. (1)

Problem 11

"How can I get more students to volunteer their time and services in this program?"

1. Try to get the university to include this program as mandatory for all psychology majors. (3)
2. Try to get the university to give students academic credit for their services. (4)
3. Try to get any course to offer the program in their curriculum. (5)
4. Broadcast a convincing talk, calling for more volunteers, on the local radio station. (8)
5. Offer monetary rewards for students who enroll in the program. (2)
6. Have some doctors or hospital administration personnel urge volunteers to join the program. (3)
7. Devise an efficient transportation schedule to minimize wasted travelling time to and from the hospitals so people will be more likely to want to join. (5)
8. Have the program approved as a three credit course with guaranteed "A's". (1)
9. Bribe the students with parties to join. (1)
10. Have representatives of the program make personal contacts with students in the dorms when they interact in such a personal manner the program may have more appeal. (4)

11. Present various awards for service and volunteering. (8)
12. Try to obtain a grant to improve the program for the volunteers, such as funding social events for them to promote a feeling of comraderie. (9)
13. Have it a general university requirement to participate in the program. (2)
14. Try to dispel any fears students have of mental hospitals by showing films and photographs of volunteers and patients in action of a typical evening. (9)
15. Tell the students that such community involvement will help them tc get into graduate schools. (6)
16. Mention that the program provides good experience to those who plan tc go into the field of psychology. (7)
17. Mention that it would give students a good perspective of the hospital environment for those who might be considering this field for a career. (7)

Problem 12

"What can be done by the university community to reduce the number of robberies and burglaries in the dormitories on campus?"

1. Increase the number of security patrols in the dorms. (7)
2. Have the student patrols in the dorms to be watchful of suspicious characters. (9)
3. Have the doors to every dorm locked so the residents' keys will unlock them, therefore, only the residents have access to the dorms. (8)
4. Have a group of students check the ID's of everyone that enters into the dorm, allowing only students with ID's or visitors accompanied by a resident to enter. (6)
5. Have anyone that enters a dorm write down what items he/she has with him/her and have this checked when he/she leaves to see if he/she has nothing else. (3)
6. Install an alarm system that will go off in the event of a door being broken into, or a window being broken. (3)
7. Encourage students to put other additional locks on the doors to their rooms. (5)
8. Encourage students to have pets serve as watchdogs. (4)

9. Have students always arrange their class schedules so that there will always be someone in the room. (1)
10. Have the dormitory building close down automatically when an alarm goes off so no one can leave or enter the building until it is ascertained that everything is OK. (2)
11. Have the university supply each dorm with a stereo, typewriters, and radios so that the number of thefts of these items will drop, due to the lack of necessity to steal them. (1)
12. Put locks on the closets in the dorm rooms. (6)
13. Have security stationed at each gate so all visitors must check in and out. (9)
14. Allow for the local Police to have more freedom and access on campus. (5)
15. Use extensive advertisement (eg. posters, pamphlets, etc.) emphasizing the seriousness of the problem. (7)
16. Install more secure windows to the dorms. (8)
17. Make each resident wear an identification button. (2)

Appendix F

ADDITIONAL QUESTIONS

1. How confident are you of your ability to resolve this problem?

1	2	3	4	5	6	7
not at all confident			fairly confident			very confident

2. How certain are you that your choice was the "best" solution?

1	2	3	4	5	6	7
extremely certain			moderately certain			extremely uncertain

3. How satisfied are you regarding your choice among the alternatives?

1	2	3	4	5	6	7
extremely satisfied			extremely satisfied			extremely dissatisfied

4. If you had to face this problem in "real-life" how much difficulty do you think you would have experienced when trying to solve it?

1 2 3 4 5 6 7

no dfficulty moderate difficulty extreme difficulty

Appendix G

POST-EXPERIMENTAL QUESTIONNAIRE

	Yes	No
1. Did you for the most part, find it difficult, if not impossible to decide between the 2 or 3 best alternatives?	____	____
2. For the most part, did you find the choice was clear between the alternatives?	____	____
3. Did you get confused because there were many alternatives to choose from?	____	____
4. Were the instructions on how to make your decisions helpful?	____	____
5. Were the instructions on how to make your decisions:		
a) hard to use?	____	____
b) practical?	____	____
c) appropriate to the type of problems you were given?	____	____
d) something you think may help you make decisions in the future:	____	____
6. Did you actually follow the instructions when making your decision ?	____	____

7. What if any, deceptions do you think occured in this experiment?

Turn the page for the last question.

Describe the instructions you were given with respect to how you were to make your decisions.

Appendix H

DACL FORM A

Directions: Below you will find words which describe different kinds of moods and feelings. Check the words which describe How You Feel Now -- Today. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly and check all of the words which desribe how you feel today.

---Wilted	---Strong
---Safe	---Tortured
---Miserable	---Listless
---Gloomy	---Sunny
---Dull	---Destroyed
---Gay	---Wretched
---Low-spirited	---Broken
---Sad	---Light-hearted
---Unwanted	---Criticized
---Fine	---Grieved
---Broken-hearted	---Dreamy
---Down-cast	---Hopeless
---Enthusiastic	---Oppressed
---Failure	---Joyous
---Afflicted	---Weary
---Active	---Droopy

Appendix I

DACL FORM B

Directions: Below you will find words which describe different kinds of moods and feelings. Check the words which describe How You Feel Now --Today. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly and check all of the words which describe how you feel today.

---Downhearted
---Lively
---Unfeeling
---Alone
---Unhappy
---Alive
---Terrible
---Poor
---Forlorn
---Alert
---Exhausted
---Heartsick
---Bright
---Glum
---Desolate
---Composed
---Clean
---Dispirited
---Moody
---Pleased
---Dead
---Sorrowful
---Bleak
---Light
---Morbid
---Heavy-hearted
---Easy-going
---Gray
---Melancholy
---Hopeful
---Mashed
----Unlucky

Appendix J

MANOVA SUMMARY TABLES

MANOVA SUMMARY TABLES

VARIABLE: PRETRAINING EFFECTIVENESS SCORES

SOURCE	SS	DF	MS	F	PROB
M	236.31	5	47.26	1.35	0.24
E	4197.65	120	34.98		
CT	4433.96	125			
G	47.74	2		0.68	0.50
D	131.87	1		3.77	0.05*
G*D	76.92	2		1.10	0.33

VARIABLE: POSTTRAINING EFFECTIVENESS SCORES

SOURCE	SS	DF	MS	F	PROB
M	333.75	5	66.75	2.26	0.05*
E	3550.02	120	29.58		
CT	3883.77	125			
G	154.10	2		2.60	0.07
D	24.11	1		0.82	0.36
G*D	241.94	2		4.09	0.01**

VARIABLE: PRETRAINING CONFIDENCE

SOURCE	SS	DF	MS	F	PROB
M	203.53	5	40.70	1.72	0.13
E	2846.12	120	23.71		
CT	3049.65	125			
G	113.37	2		2.39	0.09
D	60.21	1		2.54	0.11
G*D	21.03	2		0.44	0.64

VARIABLE: POSTTRAINING CONFIDENCE

SOURCE	SS	DF	MS	F	PROB
M	131.96	5	26.39	0.90	0.48
E	3929.25	120	29.41		
CT	3661.21	125			
G	67.65	2		1.15	0.32
D	60.23	1		2.05	0.15
G*D	11.60	2		0.20	0.82

VARIABLE: PRETRAINING CERTAINTY

SOURCE	SS	DF	MS	F	PROB
M	195.25	5	39.05	1.48	0.19
E	3159.06	120	26.32		
CT	3354.32	125			
G	124.93	2		2.37	0.09
D	46.72	1		1.77	0.18
G*D	6.73	2		0.13	0.88

VARIABLE: POSTTRAINING CERTAINTY

SOURCE	SS	DF	MS	F	PROB
M	189.82	5	37.96	1.45	0.21
E	3140.53	120	26.17		
CT	3330.35	125			
G	136.85	2		2.61	0.07
D	8.65	1		0.33	0.56
G*D	30.94	2		0.59	0.55

VARIABLE: PRETRAINING SATISFACTION

SOURCE	SS	DF	MS	F	PROB
M	175.74	5	35.14	1.87	0.10
E	2251.97	120	18.76		
CT	2427.71	125			
G	125.78	2		3.35	0.03*
D	37.86	1		2.02	0.15
G*D	6.74	2		0.18	0.83

VARIABLE: POSTTRAINING SATISFACTION

SOURCE	SS	DF	MS	F	PROB
M	206.12	5	41.22	1.80	0.11
E	2753.36	120	22.94		
CT	2959.49	125			
G	179.03	2		3.90	0.02*
D	16.35	1		0.71	0.40
G*D	0.05	2		0.00	0.99

VARIABLE: PRETRAINING DIFFICULTY

SOURCE	SS	DF	MS	F	PROB
M	157.59	5	31.51	1.10	0.36
E	3423.33	120	28.52		
CT	3580.92	125			
G	29.27	2		0.51	0.60
D	107.64	1		3.77	0.05*
G*D	14.04	2		0.25	0.78

VARIABLE: POSTTRAINING DIFFICULTY

SOURCE	SS	DF	MS	F	PROB
M	64.30	5	12.86	0.35	0.88
E	4405.85	120	36.71		
CT	4470.15	125			
G	62.71	2		0.85	0.42
D	0.55	1		0.02	0.90
G*D	4.10	2		0.06	0.94

VARIABLE: GRADE POINT AVERAGE

SOURCE	SS	DF	MS	F	PROB
M	11.44	5	2.28	0.08	0.99
E	2218.16	76	29.18		
CT	2229.60	81			
G	4.79	2		0.08	0.92
D	0.00	1		0.00	0.99
G*D	10.18	2		0.17	0.84

VARIABLE: AGE

SOURCE	SS	DF	MS	F	PROB
M	26.96	101	5.99	0.46	0.80
E	1322.04	101	13.08		
CT	1352.01	106			
G	27.79	2		1.06	0.34
D	2.65	1		0.20	0.65
G*D	0.92	2		0.04	0.96

VARIABLE: SEX

SOURCE	SS	DF	MS	F	PROB
M	0.09	5	0.01	0.08	0.99
E	30.44	120	0.25		
CT	30.53	125			
G	0.03	2		0.06	0.94
D	0.01	1		0.06	0.81
G*D	0.03	2		0.06	0.94

VARIABLE: LOCATION

SOURCE	SS	DF	MS	F	PROB
M	0.39	5	0.07	0.46	0.81
E	20.81	120	0.17		
CT	21.21	125			
G	0.29	2		0.84	0.43
D	0.002	1		0.02	0.89
G*D	0.17	2		0.50	0.60

VARIABLE: PRETRAINING LATENCY

SOURCE	SS	DF	MS	F	PROB
M	38328.14	5	7665.62	0.47	0.80
E	1969722.96	120	16414.35		
CT	2008051.11	125			
G	9034.94	2		0.28	0.75
D	26328.69	1		1.60	0.20
G*D	4102.81	2		0.12	0.88

VARIABLE: POSTTRAINING LATENCY

SOURCE	SS	DF	MS	F	PROB
M	66264.67	5	13252.93	0.54	0.74
E	2926995.03	120	24391.62		
CT	2993259.71	125			
G	32768.37	2		0.67	0.51
D	23643.99	1		0.97	0.32
G*D	4281.13	2		0.09	0.91

VARIABLE: DACL 1

SOURCE	SS	DF	MS	F	PROB
M	367.91	5	73.58	0.83	0.53
E	10624.03	120	88.53		
CT	10991.94	125			
G	106.39	2		0.60	0.55
D	159.14	1		1.80	0.18
G*D	52.93	2		0.30	0.74

VARIABLE: DACL 2

SOURCE	SS	DF	MS	F	PROB
M	1277.70	5	255.54	3.56	0.005**
E	8608.33	120	71.73		
CT	9886.03	125			
G	143.55	2		1.00	0.37
D	958.03	1		13.35	0.0004**
G*D	235.48	2		1.64	0.19

VARIABLE: TOTAL MEANS

SOURCE	SS	DF	MS	F	PROB
M	19.39	5	3.87	0.56	0.73
E	637.99	92	6.93		
CT	657.38	97			
G	3.78	2		0.27	0.76
D	4.37	1		0.63	0.42
G*D	10.43	2		0.75	0.47

VARIABLE: TOTAL TIME

SOURCE	SS	DF	MS	F	PROB
M	8.34	5	1.66	1.28	0.27
E	119.99	92	1.30		
CT	128.33	97			
G	1.31	2		0.50	0.60
D	1.99	1		1.53	0.21
G*D	5.02	2		1.93	0.15

VARIABLE: TOTAL IRRELEVANT MEANS

SOURCE	SS	DF	MS	F	PROB
M	5.95	5	1.19	1.82	0.11
E	60.04	92	0.65		
CT	66.00	97			
G	5.33	2		4.09	0.01**
D	0.002	1		0.00	0.95
G*D	1.34	2		1.03	0.36

VARIABLE: TOTAL NC MEANS

SOURCE	SS	DF	MS	F	PROB
M	6.75	5	1.35	2.60	0.03*
E	47.86	92	0.52		
CT	54.62	97			
G	4.99	2		4.80	0.01**
D	1.45	1		2.79	0.09
G*D	1.12	2		1.08	0.34

VARIABLE: RELEVANCY RATIO

SOURCE	SS	DF	MS	F	PROB
M	0.12	5	0.02	0.74	0.59
E	3.00	92	0.03		
CT	3.12	97			
G	0.02	2		0.44	0.64
D	0.05	1		1.60	0.20
G*D	0.01	2		0.30	0.74

VARIABLE: TOTAL MEANS (POSITIVE STORIES)

SOURCE	SS	DF	MS	F	PROB
M	22.41	5	4.48	1.42	0.22
E	300.15	92	3.15		
CT	322.57	97			
G	12.49	2		1.98	0.14
D	2.28	1		0.72	0.39
G*D	9.82	2		1.56	0.21

VARIABLE: TOTAL MEANS (NEGATIVE STORIES)

SOURCE	SS	DF	MS	F	PROB
M	8.34	5	1.66	0.72	0.61
E	219.71	92	2.31		
CT	228.05	97			
G	2.29	2		0.50	0.61
D	0.77	1		0.34	0.56
G*D	2.29	2		0.50	0.61

VARIABLE: IRRELEVANT MEANS (POSITIVE STORIES)

SOURCE	SS	DF	MS	F	PROB
M	2.66	5	0.53	2.10	0.07
E	24.12	92	0.25		
CT	26.79	97			
G	2.24	2		4.43	0.01**
D	0.03	1		0.12	0.73
G*D	0.07	2		0.14	0.86

VARIABLE: IRRELEVANT MEANS (NEGATIVE STORIES)

SOURCE	SS	DF	MS	F	PROB
M	0.917	5	0.18	0.64	0.66
E	27.02	92	0.28		
CT	27.94	97			
G	0.533	2		0.94	0.39
D	0.064	1		0.23	0.63
G*D	0.699	2		1.23	0.29

VARIABLE: NO MEANS (POSITIVE STORIES)

SOURCE	SS	DF	MS	F	PROB
M	0.910	5	0.18	1.00	0.42
E	17.22	92	0.18		
CT	18.13	97			
G	0.446	2		1.23	0.29
D	0.29	1		1.61	0.20
G*D	0.06	2		0.17	0.84

VARIABLE: NO MEANS (NEGATIVE STORIES)

SOURCE	SS	DF	MS	F	PROB
M	2.73	5	0.54	1.46	0.21
E	35.62	92	0.37		
CT	38.35	97			
G	1.65	2		2.21	0.11
D	0.95	1		2.56	0.11
G*D	0.88	2		1.17	0.31

M=MODEL
E=ERROR
CT=CORRECTED TOTAL
G=GROUP
D=DEPRESSION LEVEL
G*D=GROUP BY DEPRESSION INTERACTION

*p<0.05
**p<0.01