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Depressive Attributional Style in Psychiatric Inpatients and Undergraduates: Effects of Reinforcement Level and Assessment Procedure

by

Graham Martin Wallett Watson

A thesis

presented to the University of Manitoba

in partial fulfilment of the

requirements for the degree of

Doctor of Philosophy

in

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Winnipeg, Manitoba

THE UNIVERSITY OF MANITOBA

FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a Ph.D. thesis entitled: Depressive Attributional Style in Psychiatric Inpatients and Undergraduates: Effects of Reinforcement Level and Assessment Procedure

submitted by Graham Martin Wallett Watson

in partial fulfilment of the requirements for the Ph.D. degree.

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(*The signature of the Chairman does not necessarily signify that the Chairman has read the complete thesis.)

DEPRESSIVE ATTRIBUTIONAL STYLE IN PSYCHIATRIC INPATIENTS AND UNDERGRADUATES: EFFECTS OF REINFORCEMENT LEVEL AND ASSESSMENT PROCEDURE

BY

GRAHAM MARTIN WALLETT WATSON

A thesis submitted to the Faculty of Graduate Studies of the University of Manitoba in partial fulfillment of the requirements of the degree of

DOCTOR OF PHILOSOPHY

Preface

This dissertation represents the toil of almost five years. After about 8 months of work, the proposal was submitted to my committee on March 9, 1979. The clinical study was run between November 1979 and June 1981 - an incredible 20 month interval. The undergraduate study took a shorter period of time from October 1980 to April 1981. The final oral was held on April 19, 1983, about two years after the completion of data collection. I a relieved that the dissertation is finally completed.

My task was ably assisted by the efforts of many people whom I wish to acknowledge. Dr. Dennis Dyck provided support, encouragement and guidance throughout the five years. I could not have asked for a better supervisor. Ulana, my wife, and I met with Dennis and Susan Dyck on many social occasions to our mutual enjoyment.

The other members of my committee made a number of thoughtful comments and suggestions which were incorporated into the dissertation. I wish to extend my appreciation to Drs. Dan Perlman and John Schallow (Dept. of Psychology), Dr. Ed Boldt (Dept. of Sociology) and Dr. Constance Hammen (Dept. of Psychology, University of California, Los Angeles). This was the first time an external examiner has at-

tended a final oral in the history of the Department of Psychology. Needless to say, I feel very complimented.

At several key points in the development of the research, several people provided appreciated input. Drs. John Adair (Psychology) and Lance Roberts (Sociology) pointed out useful reference material. Dr. John Arnett (Dept. of Psychiatry, Health Sciences Centre) assisted me in approaching this institution to do the clinical study. Unfortuantely, the hospital's procedures could not accomodate the research. Finally, Mike Dresel provided assistance on numerous occasions. In particular, he made several suggestions while I was developing the program for the Apple II Plus computer and he programed the Apple to transmit data over the telephone to the university's main frame computer.

The studies were funded by a Manitoba Mental Health Research Foundation grant (387-1665-07) awarded to myself and a Natural Sciences and Engineering Research Council grant (311-1665-06) awarded to Dennis Dyck.

I wish to extend my appreciation to the staff and inpatients of the North and South wards in the Department of Psychiatry, The Grace General Hospital, Winnipeg. Mrs. Helen Willison, Administrative Assistant, was very helpful in organizing the staff at the hospital. On a case by case basis, Drs. W. Hunzinger, J. Varsamis, K. Ford, W. Kreyes and Lucy provided the diagnosis and permission to proceed.

Various people lent assistance as experimenters and raters and provided editorial help. Many thanks to Brenda Nazer, Jennifer Janzen, Kerry Bryski, Alex Leung and Ulana. Also, I'd like to mention Teresa Leung who tragically passed away after Alex had completed his contribution to this research.

Many thanks go out to my family and friends who provided words of encouragement over the years. Finally and most importantly, I'd like to record my appreciation to Ulana for her patience. As with many spouces of A.B.D. (all but dissertation) students, she found herself alone many weeknights and weekends. Even when I was present, I was frequently preoccupied and distant. So to you, Ulana, I owe you one - many times over.

Over the last month, people have been enquiring about my future plans. My immediate goals do not involve carear advancement or academic pursuits. Rather I seek to attend to other aspect of life - socializing, personal interests (birding, building wooden furniture, colour slide photography including printing), sports (golf, cross country skiing) and spending more time with Ulana. We are talking about taking a trip overseas this summer. Ah, the good life.

Graham Watson
April 27, 1983
Winnipeg

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Abstract

The relationship between causal attributions and depression was examined by a multimethod procedure in two separate experiments. In the first study, unipolar depressed patients and a group of psychiatric controls received 20%, 50%, or 80% reinforcement on a bogus social empathy task. Following the task, a funnelled questionning procedure assessed spontaneous intratask attributions and open-ended and structured retrospective attributions. The questionning format allowed for ascriptions of multiple causality involving both facilitating and/or debilitating factors. The results provided mixed support for the reformulated learned helplessness model of depression. Specifically, depressed patients relative to psychiatric controls ascribed structured attributions in a less self-serving manner after 20% reinforcement on the dimensions of locus of causality, stability and generality. Also, the depressed group was less self-serving on the stability dimension after 50% reinforcement. Parallel results occurred when subjects dimensionalized their open-end retrospective attributions. Similar group differences did not emerge, however when trained judges dimensionalized the open-ended retrospective and the recalled attributions. Thus the hypothesized attributional style did not appear

spontaneously while the patients were performing the social empathy task. Also, when the patients self-generated their own attributions after the task, the depressive attributional style was demonstrated when the subjects but not when the raters dimensionalized the attributions. The second study applied the same experimental protocol to undergraduates who were selected for level of depression on the basis of their scores on the Beck Depression Inventory. The results in each measurement phase provided little support for the reformulated model of depression. Thus given the same experimental situation, the hypothesized attributional pattern was evident in a clinical sample, but not in a normal sample. The implications of these results for the reformulated model and attributional assessment methods were discussed.

Introduction

The reformulated helplessness model of depression hypothesizes an attributional pattern involving a tendency to make internal, stable and global attributions for negative outcomes (Abramson, Seligman, & Teasdale, 1978b) and, more speculatively external, unstable, and specific attributions for positive ones (Seligman, Abramson, Semmel, & von Baeyer, 1979). Such an attributional pattern is thought to bias an individual's interpretations of significant experiences, thereby producing deficits that characterize depression.

Causal explanations can have greater or lesser complimentary implications for the attributor's perception of his or her self. For example, a person's self-esteem is presumably more protected when the reasons for failure are externalized than when they are internalized. The term 'self-serving' refers to the apparent implications for the attributor's self-perception. Thus the externalization of failure can be described as highly self-serving. Using this terminology, it can be said that the reformulated model postulates that depression is associated with a lessened self-serving attributional style for both positive and negative outcomes. A word of caution is advised with the usage of the term 'self-serving attributional style'. In this paper, it does not refer to the process of attributional formation,

rather it refers only to the complimentary implications of the results of an unspecified process.

The reformulated model was partly based upon studies on undergraduate subjects which employed various in vivo laboratory tasks to experimentally induce success or failure. (Klein, Fencil-Morse, & Seligman, 1976; Kuiper, 1978; Litman-Adizes, Note 1; Rizley, 1978). These studies supported the hypothesis for locus after failure and provided some support for locus after success. The hypothesis concerning the stability dimension received limited support and the generality dimension was not investigated in these studies. A recent clinical study used an in vivo task and also produced mixed support for the reformulated model (Miller, Klee and Norman, 1982). These researchers had psychiatric inpatients generate one main cause for their success or failure on a noise-escape task. When the patients dimensionalized the cause, no group differences emerged. However, when trained evaluators dimensionalized the same cause, primary and secondary depressed patients were less self-serving than the psychiatric controls on the attributional composite after failure and were more self-serving after success.

Apart from laboratory tasks, researchers investigating the reformulated model have used two other approaches: attributing to hypothetical events and recent life stress events. These research approaches have explored cross-situational generality, since the reformulation assigned depres-

sive attributional style a conceptual status approaching that of a trait (cf. Mischel, 1968). These approaches will be reviewed in turn (see Appendices A and B for an extensive review of causal attributions and depression).

In the first alternative investigative procedure, the Attributional Style Questionnaire (A.S.Q.) provides respondents with a series of hypothetical interpersonal and achievement outcomes. (Peterson, von Baeyer, Abramson, Metalsky, and Seligman, in press). For each positive or negative outcome, subjects generate a cause and dimensionalize them along the lines articulated by the reformulated model. Using this format, Seligman et. al. (1979) demonstrated that relative to controls, depressed undergraduates made more internal, stable, and global attributions for bad outcomes and less internal and stable, but not global, attributions for good outcomes. Other research with the A.S.Q. and undergraduates reporting mild depression has supported the reformulated model (e.g., Metalsky, Abramson, Seligman, Semmel, & Peterson, 1982; Peterson, Schwartz, & Seligman, 1981; Sweeney, Schaeffer, & Golin, 1982). Nonetheless, often the correlations between the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the A.S.Q. have been low (e.g., Blaney, Behar, & Head, 1980; Golin, Sweeney, & Schaeffer, 1981; Manly, McMahon Bradley, & Davidson, 1982).

In an extension to a psychiatric sample, Raps, Peterson, Reinhard, Abramson, and Seligman (1982) found strong support for the attributional style hypothesis for negative outcomes. Unipolar depressives attributed bad outcomes on the A.S.Q. to more internal and stable, but not global characteristics, than schizophrenics and medical patients. These results indicate that the hypothesized attributional style, at least for hypothetical events, is unique to depression and not to psychopathology in general. In another clinical study, Miller et. al. (1982) found that primary and secondary depressed inpatients did not differ from the psychiatric controls on an abbreviated A.S.Q.

Research using the A.S.Q. has several limitations. First, as already noted, correlations with measures of depression have typically been low. Second, subjects may not attribute personally involving events in the same way as they do hypothetical events (cf. Chanowitz & Langer, 1980, for a relevant discussion on the impact of involvement for personal processing).

In the second alternative approach, Hammen and her colleagues have had their participants make attributions for recently experienced stressful life events (e.g., Barthe & Hammen, 1981; Hammen & Cochran, 1981; Hammen & deMayo, 1982; Hammen, Krantz & Cochran, 1981; see also Harvey, 1981). Using this format with nonclinically depressed subjects, this research has produced little support for a depressive attri-

butional style as predicted by the reformulated model. The hypothesis fared somewhat better with clinical participants. In a study by Gong-Guy and Hammen (1980) clients' scores on the BDI were correlated with their characterization of the main cause of each personally relevant life event. Depressed clients attributed their most upsetting event to internal and marginally more to global factors more often than nondepressed clients. Thus the reformulated model was supported partially, however when the clients rated their five most upsetting events, no attributional differences were seen. In the other clinical study, Miller et. al. (1982) found that depressed inpatients were less self-serving than the control group on the attributional composite of their most stressful recent life event. Nonetheless, when trained evaluators dimensionalized the patients' written description of the same event, then no group differences emerged.

Research using recent life events has produced some support for depressive attributional style with clinical samples, but little support with normal samples. Recently, Hammen and Mayol (1982) suggested that more promising results may be found if researchers take into account the characteristics of the stressful events as well as individual cognitive patterns.

In conclusion, research using in vivo laboratory tasks, hypothetical events, and real life events has provided limited support for a depressive attributional style. Part of

the reason for these mixed results may be the heavy reliance on normal samples (e.g., undergraduates). In view of the fact that people who self-report mild depressive symptoms have not been found to distort contingency information in the manner expected by the reformulated model (e.g., Alloy & Abramson, 1979), it should not be too surprising that this population has not strongly distorted attributions in a self-defeating manner. In any event, the attributional style hypothesis is most properly evaluated with clinically depressed samples (cf. Depue & Monroe, 1978).

In addition to the frequent use of nonclinical samples, previous research may be criticized for (a) inadequately conceptualizing depressive attributional style, and (b) various methodological concerns that may have introduced an artifactual attributional style. These two issues will be considered subsequently.

Conceptual Concerns

Depressive attributional style has been inadequately conceptualized. Presumably spontaneous attributional processing frequently involves a multi-causal explanation. Thus requesting subjects to select only one cause may severely restrict the empirical base upon which attributional style inferences are made. Also, a multi-causal explanation might include reference to both facilitating and debilitating influences on the achievement of a particular outcome.

For example, "My ability helped me, but I did poorly because I was distracted by the noise next door." At intermediate or ambiguous outcomes, multiple causal attributions would presumably include reference to both facilitating and debilitating causes. If after such an outcome, an attributional question was worded, "To what extent did your ability determine the outcome?", then a hypothetical subject could interpret ability as exerting either a helping or a hindering influence. The choice of the direction of effect (i.e., whether or not the cause helped or hindered the achievement of the desired outcome) would have rather different implications. In this example, it would be incorrect to credit the subject with a self-serving attribution on the basis of a highly internal rating of ability if the subject believed his/her ability had a negative influence. Many events in every day life have an intermediate, if not ambiguous, level of success, so it would be prudent to account for the direction of effect in multi-causal explanations.

It is worth noting that previous research has generally not incorporated multiple causality and/or the direction of effect. Typically studies using hypothetical or real life events have requested only one cause per event. This cause was always facilitating after a positive outcome and debilitating after a negative outcome. In contrast studies using in vivo tasks have allowed typically for multiple causality, however the direction of effect has not been adequately assessed. For example, Rizley (1971) and Litman-Adizes (Note

1) measured only facilitating factors after success and debilitating factors after failure while other studies have ignored the direction of effect (e.g., Klein et. al., 1976; Kuiper, 1978).

Methodological Concerns

In addition to the conceptual problem identified above, an over-reliance on life events schedules and hypothetical events may inadvertently disguise differences in the causal analysis of real life events. Laboratory tasks have been criticized for being contrived and having limited personal relevance and involvement for the participating subjects (Wortman & Dintzer, 1978). Nonetheless, such tasks have several advantages over other techniques. As mentioned previously, attributional questionnaires present hypothetical events which may be cognitively processed differently than real life events. Also a life events schedule presents personally relevant events, but at the sacrifice of introducing variation of situations from subject to subject. Presumably, the information implicit in the differing events will modify the results of attributional processing. In contrast, laboratory tasks can be designed to be personally relevant and have the advantage of presenting the same event to all pariticipants. Also, laboratory tasks can assess spontaneous causal attributions rather than relying only on retrospective analyses, and they can readily assess temporal influences.

Previous laboratory research may be flawed, since the use of a structured method to assess attributions does not allow the researcher to demonstrate that subjects would self-generate the hypothesized attributional style. Typically such research has employed the four causal factors of ability, effort, task difficulty, and luck (e.g., "To what extent was ability a cause for your failure?"). Such structured questionning may introduce acquiescence to socially undesirable self-refering statements rather than reveal private attributional processing.

While there are definite advantages to structured questionning, the major disadvantage is that the attributions are strongly cued by the experimenter. Related weaknesses typically include the following: (a) the experimenter rather than the subject initiates the causal analysis; (b) the questionning has typically contained an evaulative statement of the subject's performance rather than leaving the evaluation up to the subject; (c) the causes selected by the researcher may cue the subject to consider influences that he/she would not have ordinarily considered; (d) the limitation to four causes may fail to tap the diversity of possible attributions held by people; and (e) the subject's phenomenal perception of the causes may not map into the three dimensions as conceptualized by the researcher (e.g., effort may be stable or unstable).

Differences in attributional style which are based solely on a structured assessment may only reflect acquiescence to socially undesirable self-referant statements. While such a tendency, if demonstrated, is not uninteresting, it is important to recognize that it may not necessarily typify the way people normally process information. Another related point is that exclusive reliance on the structured mode may obscure possible differences in the self-generation and dimensionalization of causes.

In view of the previous criticisms, the present research used a broadly based assessment procedure to measure attributional style in psychiatric inpatients (Experiment One) and undergraduates (Experiment Two). A funneled questioning format elicited both open-ended and structured attributions. Spontaneous private attributions were measured by requesting subjects to recall attributions made during an experimental task. Causal factors were not supplied to the subject; rather the questionning was open-ended. In addition, a posttask causal analysis was initiated at the experimenter's request. Again, the subjects self-generated the causal explanation and then rated each cause for (a) the extent it helped/hindered his/her score, and (b) its dimensional status. Finally, to provide a comparison with previous research, a second phase of posttask questionning was introduced whereby the experimenter supplied causal factors for consideration. However, in order to capture the breadth

of possible causal explanations and to provide a more rigorous test, 17 factors were presented. Again, the subjects rated the structured factors concerning the extent of influence and dimensional status.

The purpose of the present research was to assess depressive attributional style using experimentally manipulated levels of reinforcement and a multifaceted attributional assessment procedure. In the first experiment, a depressed and a control group of psychiatric inpatients were led to expect about a 50% success rate, but actually received either a low (20%), medium (50%), or high (80%) level of reinforcement on a bogus task measuring "social empathy". A three stage questionning procedure assessed spontaneous attributions made during the task (recalled intratask), and posttask causal analyses where the attributions were self-generated (open posttask) or were supplied (structured posttask). A lessened self-serving attributional style was conceptualized as the tendency to associate helping causes with more internal, stable and global characteristics; and the tendency to associate hindering causes with more external, unstable and specific characteristics. In accordance with the reformulated model, depressed patients were expected to have a lessened self-serving attributional style at the negative outcome condition (20% reinforcement) for each assessment stage (Abramson et. al., 1978b). More speculatively and consistent with Seligman et. al.'s (1979) suggestion, depressives were expected to be less self-serving at the po-

sitive outcome conditions (50% and 80% reinforcement) for each assessment stage.

Two judges rated the audiotaped recalled and open posttask attributions as well as the structured postask attributions along the three causal dimensions. This procedure allowed for the examination of dimensional reliability. In contrast to previous actor by observer research, the judges dimensionalized the subjects' attributions, rather than either dimensionalizing the event itself or making their own attributions (see Zuckerman, 1979, for review of research). It was predicted that the depressive attributional style would be duplicated when the judges supplied the dimensionalization. Also the effect of perspective (i.e., judges vs. subjects) upon the dimensionalization of attributions was investigated, although no specific prediction was made.

Finally, the mediational role of causal attributions in the perpetuation of depression was investigated in the first experiment only. It was predicted that depressive attributional style would be associated with a higher level of depressive symptoms one week later. To be meaningful this association had to be over and above the influence of the patients' initial level of depression.

In the second experiment, undergraduates were administered a self-report inventory of depressive symptoms and the same experimental protocol. The availability of a larger population of participants allowed the inclusion of a third independent variable, gender, in this experiment.

Experiment One

Method

The inpatient study involved a 2 X 3 design involving two levels of diagnosis (depressed and control) and three levels of outcome on the experimental task. Subjects received a low (20%), intermediate (50%), or high (80%) level of success on a word association task. Recalled and post-task causal attributions were assessed after completing the task.

Subjects. The subjects were 42 psychiatric inpatients at the Grace General Hospital, Winnipeg, Canada between November 1979 and June 1981. The inpatient department is a modern acute care facility which contains 54 beds in two wings. The typical duration of hospitalization is about 21 days.

Both the depressed and control groups were selected on the basis of the following inclusion criteria: (a) admitting psychiatrist consented to the inpatient's participation in the study, (b) no evidence of organicity or toxic involvement (e.g., alcoholism), (c) no other medical condition (e.g., diabetes), (d) no electroconvulsive therapy received since admission, (e) the inpatient volunteered to participate, (f) age between 18 and 65 years, (g) minimum grade 7

education, (h) the opportunity to pretest within 10 days of admission, and (i) a raw score of 21 or higher on the vocabulary subtest of the Shipley Institute of Living Scale.

The criteria for the unipolar depressed group were: (a) an admitting diagnosis of primary affective disorder (psychotic depressive reaction and depressive neurosis), but manic-depressive psychosis and cyclothymic personality disorder were specifically excluded, (b) a score of 14 or more on the Beck Depression Inventory (BDI), and (c) a discharge diagnosis that was consistent with membership in the depressed diagnostic group.

The criteria for the control psychiatric group were: (a) an admitting diagnosis not involving unipolar depression, manic-depression (depressed phase only), and cyclothymic personality disorder, (b) a score of 13 or less on the BDI, and (c) a discharge diagnosis that was consistent with membership in the control group. The last criterion for both groups was necessary because the admitting diagnosis was sometimes changed due to additonal information collected during hospitalization. For example, if the admitting diagnosis was changed from depression to manic depression, depressed phase, then the patient was excluded from the study. However, if a patient's diagnosis was changed from, say, paranoid shizophrenia to paranoid personality then the patient was included since his/her diagnostic group membership was consistent.

Diagnoses were based upon the psychiatric department's standard diagnostic procedures (International Classification of Diseases; ICD-8). The BDI scores were employed to confirm the diagnoses used by the five participating psychiatrists. Preferably, the selection of diagnostic groups in a research study should meet the criteria in the DSM III, however it was not possible to use this procedure in the present study.

Apparatus. The Beck Depression Inventory or BDI (Beck, Ward, Mendelson, Mock & Erbaugh, 1961) is an interviewer-assisted or self-report inventory consisting of 21 symptoms of depression (see Appendix C). The total score can vary from 0 to 63. For clinical populations, Beck defined 0 to 13 as nondepressed, 14 to 24 as medium depressed, and 25 to 63 as severely depressed. In clinical samples, the BDI has a Spearman-Brown corrected odd-even reliability of .93 (Beck et al., 1961). The BDI score correlated significantly with clinicians' ratings of depression: .65 (Beck et al., 1961), .61 (Metcalfe & Goldman, 1965), and .66 (Nussbaum, Wittig, Hanlon & Kurland, 1963). The BDI score correlated .67 with an objective behavioral measure of depression (Williams, Barlow & Agras, 1972). Rehm (1976) reported that concurrent validity with other self-report measures of depression is moderate to good. Beck (1967) discussed construct validity and evidence for good discriminant validity between clinicians' ratings of depression and anxiety. No test-retest reliability is available for clinical samples.

The Socioeconomic Index for Occupations in Canada is a measure of occupational prestige (Blishen & McRoberts, 1976). Social economic status (SES) was predicted by occupational income and educational level for persons who worked in the 1970 male labour force in Canada. Higher SES scale values indicate greater occupational prestige: janitors (25.0), bookkeeper (50.7), physicians (74.2). For the current study, the patients' SES was based upon the occupation of the main income earner in the family.

The Shipley Institute of Living Scale (Shipley, 1940) is composed of two subtests: Vocabulary and Abstraction (Appendix D). Shipley reported that in mild degrees of mental deterioration and other conditions involving intellectual impairment, vocabulary was relatively unaffected, but the capacity for abstract (i.e., conceptual) thinking declined. Such impairment, the Conceptual Quotient (CQ), is measured by the extent to which a person's abstract thinking is relatively lower than his/her vocabulary. In a standardized sample of normally functioning people, CQ has a mean of 100 and standard deviation of 15. The lower the CQ score, the more likely the individual has experienced a deterioration in intellectual functioning (refer to Goldman, 1978, for contrary evidence). In the current study, this test was used as a gross measure of intellectual functioning, possible intellectual deterioration and to provide a sample comparison with another clinical study (Abramson, Garber, Edwards & Seligman, 1978a).

The Social Empathy Test (S.E.T.) and other measures (pretesting, manipulation check, dimensionalization) were presented on a 11 inch black and white television screen which was controlled by an Apple II Plus personal computer. The Apple had 48 K of RAM and was programed in the Applesoft version of Basic. The Apple was supported by a disk and backup Sony cassette tape recorder for program and raw data storage. The subjects responded to questions by typing in the appropriate digit on a number pad. The recalled and posttask attributional interviews were audiotaped on a second Sony cassette tape recorder. Data was transfered over an acoustic coupler and the telephone to the Univeristy of Manitoba's AMDAHL computer.

The Social Empathy Test was a modified version of the 'Interpersonal Empathy Test' previously used by Wener and Rehm (1975), Kuiper (1978) and Reiss, Rosenfeld, Melburg and Tedeschi (1981). Patients identified which of four words was the most common semantic associate of a target word (Appendix E). The 40 stimuli and their associates were selected from an undergraduate study by Palermo & Jenkins (1964). The target stimuli were chosen on the basis of their apparent connection with social intercourse and emotional content. This selection of words had apparent face-validity and allowed the delivery of predetermined feedback while minimizing suspiciousness amongst the subjects.

The feedback during the S.E.T. consisted of a 3 second flashing message ('RIGHT', 'WRONG') on the televison screen. The two practice questions displayed one 'RIGHT' and one 'WRONG' feedback generated randomly by the computer. The computer program randomly selected and administered the three outcome schedules (20%, 50%, 80%) (see the schedules in Appendix E). The Apple II recorded response times and stored this information as the average response time over blocks of 10 trials.

The structured causal factors and their dimensional dipoles were obtained from undergraduates through roleplay (N = 121) and a pilot study (N = 49). These 17 attributions listed in Appendix E can be broken down as follows: ability (3), effort and motivation (3), task difficulty and other situational factors (5), luck (1), and various other self-perceptions (5).

Procedure. The participating psychiatrists completed a face sheet concerning diagnosis and permission to proceed for each admitted inpatient (Appendix F). Possible subjects were interviewed individually and were informed that we were 'measuring the level of social empathy in patients and the results would be used to help develop procedures to assist others'. Patients were informed that participation was voluntary, that the study had no relationship with their therapeutic treatment and that the information stored in the computer and the audio tape was strictly confidential and for research purposes only. Interested patients signed a con-

sent form (Appendix F) and reported demographic information (i.e., sex, age, education, occupation, and marital status). If the patients age or education did not meet the inclusion criteria, they were politely excused from further participation.

The remaining patients were administered the BDI and the Shipley Institute of Living Scale. The number of patients tested varied from one to four on a given week. If the BDI score was inconsistent with the diagnostic group or the Vocabulary subtest had a raw score under 21, the respective patient was politely informed that his/her participation was no longer needed.

The remaining patients were seen the next day by a second experimenter who was blind to their group membership and reinforcement level. The session began by familiarizing the subject with the display of questions on the television screen and responding on the number pad. In order to reduce possible concern about socially appropriate responding in the subjects, the experimenter sat off to the side and somewhat behind the TV screen. The patient answered questions concerning their sex, age, and marital status by responding to the appropriate numbers on the number pad (Appendix E).

The 'Social Empathy Test' was then introduced with the following instructions:

> The purpose of this study is to investigate social empathy which is the ability to know what other people are thinking and feeling. It has been shown that people who rate high on social empathy are more successful

> in their relationships with others - be they spouse, family, friends, or co-workers.
>
> We have developed a psychological test of social empathy. We have found that the main component of social empathy is the ability to associate words similar to most other people. Those who associate words similar to other people can more readily empathize with another person's thoughts and feelings.

Next, the first practice question was displayed (Appendix E) and the instructions continued:

> On the screen, you see five words. The top word will be a word used often in everyday conversation. Your task is to indicate which one of the four other words most people associate to the top word. The four possible answers are peoples' common association to the top word, although they may not correspond to your personal associations. You answer by typing a number between 1 and 4. Go ahead and answer this practice question.
>
> Your answer is correct (or wrong). The correctness of your answer is based on the answers of over 1500 people. You will find it useful to use this feedback to get a feel for the type of answers that are correct. There are 40 questions in the test and most people get about 20 answers correct. Remember, the correct answer is not necessarily the association you would personally make, but the one which most people would give. Do you have any questions? Ok, start with this last practice question.

The verbal instructions and feedback were designed to lead subjects to expect about a 50% success rate. This procedure was used to minimize between-subject variance on the discrepancy between performance expectations and outcome. It should be noted that Kuiper (1978) did not provide consensus information in the task instructions. Upon completion of the practice questions, pretest questions assessed expectation, involvement with the task, and sex-linkage of the task (Appendix E). Previous research has shown that these per-

ceptions can affect the attributional process (e.g., Rosenfield & Stephen, 1978).

The patients' recall of intratask attributions was immediatedly assessed upon completion of the 'Social Empathy Test'. This audio-taped interview began with the experimenter saying, " I am interested in your thoughts during the test. While doing the test, did you evaluate how well you were doing?" If the patient responded in the affirmative, then the experimenter said, "What were your thoughts at that time?" This initial inquiry was followed up by more specific, but still open ended questions about causal attributions such as:

> While doing the test, what things did you think at that time that might be helping or hindering your score?
>
> While doing the test, what other things do you remember thinking of as maybe increasing or decreasing the score?
>
> What other helping or hindering influences did you think of durng the test?

The experimenter recorded each attribution in the patient's own words (Appendix F). To ensure the attribution was thought of during the test, rather than an afterthought, the experimenter asked, "Did you think of _____ during the test?"

When all attributions were recalled, then the experimenter summarized each influence and the direction of effect (i.e., help/hinder). If the causal dimensions of any attri-

bution were ambiguous, then the experimenter said, "What else did you think about _____ during the test?" This questionning was designed to discourage secondary processing and avoid leading the subject. Upon completion of the first interview, the patient went back to the computer to answer questions concerning his/her performance (refer to the Selected Video Displays in Appendix E).

The second interview commenced withthe experimenter eliciting an open-ended causal analysis. The experimenter asked such questions as:

> Now that you have finished the test, I'd like you to sit back and consider what things might have influenced your score.
>
> What other things may have increased or decreased your score?
>
> Any other helping or hindering influences?

The second interview was audiotaped and verbalized attributions were written down in the subject's own words (Appendix F). If a subject failed to restate a recalled attribution, then the experimenter said, "During the test, you thought that _____ helped/hindered your score. Do you consider this factor to be still influential?"

Like the first interview, the experimenter summarized all the attributions and their direction of effect to ensure that they had been identified in a mutually understandable manner. Ambiguous causal dimensions were clarified, but now secondary processing was encouraged: ("What do you mean when you say _____?" "Tell me more about _____?"). Finally, the experimenter typed in the

open-ended attributions and their respective direction of effect into the computer.

Via the number pad, the patient indicated on a 9 point Likert scale the degree of influence for each attribution (Appendix E): "To what extent did _____ [1] influence your score on the test?". Next, the patient was introduced to the 17 structured factors (Appendix E) and continued to indicate the extent to which they influenced his/her score.

The patient dimensionalized each 'influential' open and structured postask factor for: (a) locus: "Each influence on the 'Social Empathy test' is located either outside yourself and in the environment (external) or inside yourself (internal). Your score on the test was helped/hindered by _____. Is this influence located internally or externally?"; (b) stability: "Suppose you were to take the 'Social Empathy Test' again sometime in the future. Another form of the test with new words would be presented. Each reason may or may not be likely influential again. How likely will _____ continue to hinder/help your score upon retesting?"; (c) generality: "Each influence may affect few or many or your daily activities? How many daily activities does _____ hinder/help?" The three dimensional questions involved scales ranging from 1 to 8 with high scores indicating internal, stable, and global charac-

[1] The computer's program inserted the appropriate name of the factor into the question. The insertion of the appropriate factor's name and its direction of effect occurred also for the three dimensional questions.

teristics (Appendix E).

Finally, the subject was questioned via the computer concerning the face-validity of the 'Social Empathy Test' and whether they thought the study involved deception (Appendix E). The subject was then asked to complete a short questionnaire concerning their suspiciousness, enjoyment of the study, its scientific value, and prior knowledge of the study (Appendix F). If the subject had previously indicated suspicion of deception, then the questionnaire contained a series of questions on (a) the manner of the deception, (b) how they felt about being decieved, (c) how they felt their behavior was affected, and (d) if they felt the deception was necessary.

The session was completed by debriefing the subjects concerning the purpose of the experiment and the outcome deception (Mills, 1976). The debriefing was individualized by taking into consideration the outcome administered, patient's comprehension of the situation, and his/her suspiciousness. The debriefing covered the following standard information:

Purpose of Experiment. The way people explain causes in their lives may be related to their mood. We believe that people who are down tend to perceive causes in a pessimistic manner. For example, after doing poorly, they may blame themselves, expect the hindering influence to continue in the future in the same situation and in different situations. In contrast, people who are in a good mood will tend to blame failure on external influences and not expect the negative influence to continue in the future in the same situation or in different situations.

Outcome Deception. You received 8/20/32 correct answers on the Social Empathy Test. This score had nothing to do with

your ability or effort. Rather the feedback was faked to look bad/good/great. This was necessary so your perception of the influences would not be affected by your actual ability to associate words or empathize with others. Rather your perception of the influences would be influenced by the score that was assigned to you.

If the subject was suspicious, then his/her insightfulness was acknowledged. If the subject had not become suspicious, then the subject was assured that the study was designed so that people would not become aware of the faked feedback. When the subject understood the above debriefing, then he/she was dismissed with the caution not to mention the study's purpose or deception to the other patients.

For those patients who remained hospitalized 6 days later, the BDI was readministered in order to assess the relationship between diagnostic group and outcome level with self-reported depressive symptoms.

Results

In general, the pattern of results was dependent on assessment procedure and whether the subjects or raters dimensionalized the causes. When the patients provided the dimensional scores, the hypothesized attributional style was found with the 20% reinforcement, and to a lesser extent, the 50% reinforcement condtions on the open posttask and structured assessment procedures. When raters provided the dimensional scores, the hypotheses were confirmed only with the structured posttask procedure, but not on the open-ended posttask or intratask measures.

Most statistical analyses involved a two (diagnostic group) by three (outcome) MANOVA's followed up by 2 X 3 ANOVA's (.05 alpha level, 2-tailed). Planned comparisons investigated group differences within outcome levels and tested for linear and quadratic trends. Three statistical packages were used (Finn, 1976; Dixon & Brown, 1979; Nie et al., 1975).

Subjects. The 42 inpatients were divided equally amongst the 6 cells (Table 1). The depressed group (M = 29.10, SD = 13.64) had higher initial BDI scores than the control group (M = 5.29; SD = 4.05). Level of depression was not associated with the reinforcement conditions. The typical depressed patient would be categorized as 'severely depressed' by Beck (1967). The diagnoses in the control group involved schizophrenia (n = 8), manic depression, manic phase (n = 8), and other conditions (n = 5). The ratio

of these three diagnostic classes was controlled in each control group cell.

Table 2 presents the characteristics of the sample: gender (18 males), age, education, marital status, social economic status, days since admission, Shipley Institute of Living Scale scores and the experimenter. The last variable was necessary since the second experimenter had to be replaced after the 26th subject. The group by outcome MANOVA showed that the inpatients did not vary systematically on the sample characteristics (Table 2). Consistent with previous research, univariate analyses showed the depressed group was older and more often married than the control group (Raps et. al., 1982).

TABLE 1

Cell Size and Initial BDI Scores

Cell Means:

	Reinforcement Level						
	Low (20%)		Medium (50%)		High (80%)		
	n	BDI	n	BDI	n	BDI	Group Means
Depressed	7	34.00b	7	26.14b	7	27.14b	29.10
Controls	7	4.43a	7	3.86a	7	7.57a	5.29

Note. Cell means with different letters were discrepant according to the Newman-Keuls test ($p < .05$).

F Statistics:

Effects	df	SS	MS	F
Outcome	2	124.91	62.45	.60
Depression	1	5952.38	5952.38	57.36*
OD	2	187.189	93.59	.90
Error	36	3735.93	103.78	

* $p < .001$

TABLE 2

Sample Characteristics

	Depressed			Control		
Variables	20%	50%	80%	20%	50%	80%
Sex % Male	42.86	42.86	28.57	57.14	42.86	42.86
Age	36.29a	46.86b	26.14a	29.43a	31.29a	30.86a
Education	11.86ab	9.86a	12.29ab	12.57b	10.86ab	11.43ab
Marital:						
% Single	.00a	.00a	57.14ab	85.71b	57.14ab	57.14ab
% Partner	85.71b	57.14ab	14.29a	14.29a	14.29a	28.57a
% Other#	14.29	42.86	28.57	.00	28.57	14.29
S.E.S.	50.14	54.09	50.77	49.21	42.24	47.91
Days	5.43	7.71	4.86	7.86	7.43	6.29
Shipley:						
Vocab.	29.86	28.29	29.43	28.71	26.00	31.14
Abstract	21.43	20.86	26.57	25.71	16.86	24.86
C.Q.	82.29	83.29	93.14	92.71	80.00	86.29
% Exper.	57.14	28.57	57.14	57.14	85.71	57.14

Note. Single (never married), Partner (married or common-law, Other marital (separated, divorced or widowed), S.E.S. (social economic status), Days (number of days since admission) and % Exper. (percentage experimenter one). Means within a row with different letters were discrepant according to the Newman-Keuls test (.05 level).
This nonorthogonal variable was not analyzed.

F Statistics:

Variables	Outcome	Depression	OxD	MSw
MANOVA	1.22	1.29	1.19	1.00
Sex % Male	.26	.34	.09	.28
Age	4.49*	4.15*	4.11*	88.14
Education		.33	1.35	2.60
Marital:				
% Single	1.71	14.29**	4.00*	.17
% Partner	1.57	6.39*	3.65*	.18
S.E.S.	.05	1.59	.66	179.31
Days	1.87	1.98	.88	7.50
Shipley:				
Vocab.	1.42	.13	.58	25.51
Abstract	3.83*	.05	1.42	44.98
C.Q.	1.60	.00	1.92	152.13
% Exper.	.00	1.50	1.50	.25

* $p < .05$
** $p < .001$

Pretesting. After completing the practice S.E.T. questions, the patients answered questions concerning their expectations, involvement, and perception of how the sexes would differ in their performance (Table 3). The multivariate results were nonsignificant. Subjects reported they would do 'medium well' (M = 3.71) and score 23.71 corect answer out of the 40 questions. The test was of 'medium importance' (M = 4.57) and social empathy was highly valued (M = 5.60). Also the perceived characteristics of the S.E.T. did not favour one sex over the other (M = 3.95). Subjects' gender was not associated with the perception that the S.E.T. measured characteristics that favoured one sex over the other (r = .05). In summary, the pretesting indicates that subjects were involved with the testing, expected to receive about 50% correct answers and believed the S.E.T. measured characteristics shared by the sexes.

TABLE 3

Pretesting Perceptions of the S.E.T.

Cell Means:

	Expectations		Involvement		
	Well	Correct	Impor-tance	Value	Sex Bias
Depressed					
20%	2.71	21.71	4.00	4.29	3.57
50%	4.00	22.57	5.43	5.71	4.57
80%	3.14	21.29	3.71	6.14	4.00
Controls					
20%	4.00	28.00	4.57	6.29	3.86
50%	4.43	24.14	5.29	6.00	4.29
80%	4.00	24.57	4.43	5.14	3.43

Note. Means within a column were not discrepant according to the Newman-Keuls test (ps > .05).

F Statistics:

		Expectations		Involvement		
	MANOVA	Well	Correct	Impor-tance	Value	Sex Bias
O	1.02	1.19	1.17	1.87	.50	2.42
D	.98	3.31	1.75	.43	.83	.39
OD	.97	.28	2.24	.21	3.40*	.68
MSw	1.00	2.33	82.98	3.56	2.33	.98

Note. The effects are outcome (O) and depression (D).
* p < .05

Manipulation Check. The effect of the outcome conditions was assessed by average response time during the S.E.T. and self-reports of performance ("How well did you do on the test?"; "How many of your answers were correct?"; "How many questions were there in the test?"; "To what extent did you fail or succeed?"). There was a linear trend whereby subjects who received lower reinforcement responded more slowly and perceived themselves as performing more poorly, $F(5,32) = 11.50$, $p < .001$ (Table 4). Thus the manipulation of reinforcement affected the patients' behavior and perceptions in the expected manner. Orthogonal to the outcome main effect was an effect due to diagnostic group. Specifically, the depressed grouped reported they performed less well, and had a lower level of success. Thus the outcome manipulation differentially affected the groups on the more subjective self-report measures, but not on the more objective measure (i.e., number of correct answers) or behavior (response time). If the patients had differential perceptions of total number of questions in the S.E.T., then 'number of correct answers' would have to be divided by 'number of questions in the test'. This procedure was not necessary.

In summary, the outcome conditions affected the patients' behavior and self-report of performance in the predicted direction. In addition, the depressed group's self-report of performance was lower on the more subjective measures.

TABLE 4

Response Time during the S.E.T. and Perceived Performance

Cell Means:

	RT#	Well	Right	Items	Success
Depressed					
20	11.78	1.57a	12.00a	39.00	1.14a
50%	10.41	2.43ab	15.71a	40.00	2.86b
80%	7.21	4.29bc	27.57b	42.43	4.29bc
Controls					
20%	12.37	2.14ab	12.14a	41.14	3.57b
50%	7.68	4.29bc	18.00a	35.00	4.57bc
80%	7.49	5.43c	31.00b	40.00	5.43c

Note. Means within a column with different letters are discrepant according to the Newman-Keuls test (ps < .05).
Response time was measured in seconds.

F Statistics:

	MANOVA	RT	Well	Right	Items	Success
O	4.80***	3.85*	13.36***	14.66***	.84	13.54***
D	4.27**	.19	6.31*	.53	.54	20.13***
OD	.74	.56	.62	.13	.76	.90
MSw	1.00	20.85	2.36	75.39	60.52	1.62

Note. The effects are outcome (O) and depression (D).
* p < .05
** p < .01
*** p < .001

Raters Dimensions. Two trained and independent raters assigned dimensional scores to each recalled and open-ended attribution as recored on the audio tapes. The 17 structured dimensions were dimensionalized similarly by the raters. The dimensions were scored on the same 8 point scales that were used by the patients (see training guidelines in Appendix G). The raters were instructed to dimensionalize the attributions from the subject's perspective. Also, only the original factor in a causal sequence was taken into account. Since the number of verbalized attributions varied across patients, the Spearman correlations (2 tailed) displayed in Table 5 are based upon the mean score for each dimension. For both recalled and open dimensions, the raters displayed high reliability amongst the same dimensions ($ps < .001$) and strong discrimination between different dimensions ($ps > .05$).

To form the final dimensional scores, the raters' dimensional scores were standardized and averaged. The raters' resulting dimensional scales ranged from 1 to 8 - the same range as the subjects' dimensional scales.

TABLE 5

Correlations Amongst Raters Dimensional Scores

Recalled Intratask Dimensions

	Rater One			Rater Two		
	Loc	Stab	Gen	Loc	Stab	Gen
Rater One						
Locus	1.00	.08	.08	.91*	.02	.17
Stability		1.00	-.11	-.02	.81*	-.04
Generality			1.00	.03	.12	.83*
Rater Two						
Locus				1.00	-.03	.08
Stability					1.00	.05
Generality						1.00

Open Posttask Dimensions

	Rater One			Rater Two		
	Loc	Stab	Gen	Loc	Stab	Gen
Rater One						
Locus	1.00	-.23	.18	.94*	-.18	.03
Stability		1.00	-.01	-.19	.96*	.04
Generality			1.00	.16	.05	.85*
Rater Two						
Locus				1.00	-.14	.04
Stability					1.00	.08
Generality						1.00

* $p < .001$

Self-serving Measures. Separate self-serving indices were calculated for subjects and raters for each dimension at each measurement phase. Each open and structured index reflected a weighted ratio of the dimensional scores to the highest score possible if a given subject was extremely self-serving. Since neither the subjects' extent of influence scores or dimensionalization were available for the recalled measure, it was based only on the raters' dimensionalization of the intratask attributions. The indices ranged in value from .0 to 1.0 regardless of how many attributions were involved and higher values reflected a greater self-serving bias. For example, a high locus index would suggest the subject internalized helping influences and externalized hindering influences. The cutoff between a self-serving versus a self-defeating orientation is reflected in the index value of .50. Compared to the control group, depressives were expected to have lower index scores at all outcome levels. A hypothetical example of the calculation of self-serving indices is presented in Appendix H.

Recalled Attributions. Most patients reported they evaluated their performance while doing the S.E.T. ($n = 38$; 90.48% of the sample). This high response rate is important, because self-evaluation of performance is assumed to be a precursor of spontaneous causal attributional processing. The dispersal of affirmative responses was not associated with diagnosis or outcome level, Chi Square (2) = 0.15, $p > .05$ (see Table 6).

TABLE 6

Raters Mean Self-serving Indices for Intratask Attributions and Spontaneous Evaluation of Performance during the S.E.T.

Cell Means:

	Locus	Stability	Generality	Evaluate
Depressed				
20%	.61	.20	.63	85.71%
50%	.48	.42	.47	100.00
80%	.86	.87	.44	71.43
Controls				
20%	.15	.38	.62	85.71
50%	.65	.73	.50	100.00
80%	.62	.70	.43	100.00

Note. Means within a column were not discrepant according to the Newman-Keuls test (ps > .05).

F Statistics:

Effects	MANOVA	Locus	Stability	Generality	Evaluate
Outcome	3.21*	2.99	10.74**	1.22	1.09
Depression	1.63	2.13	1.48	.00	1.09
OD	1.64	2.41	2.85	.02	1.09
MSw	1.00	.15	.08	.11	.09

Note. The MANOVA included the three indices only.
* $p < .01$
** $p < .001$

TABLE 7

Mean Number of Attributions in each Measurement Phase

Cell Means:

	Intratask		Open Posttask		Structured	
	Total	DE	Total	DE	Total	DE
Depressed						
20%	1.86	- .71	3.57ab	-2.14a	11.43	-8.00a
50%	2.43	1.00	2.29a	- .57ab	9.86	-3.57a
80%	1.86	1.29	3.29b	1.86c	10.86	6.29b
Controls						
20%	1.86	-1.29	3.43ab	-1.43a	8.86	2.00b
50%	1.43	.86	1.86a	1.00bc	10.14	6.14b
80%	3.43	1.43	4.86b	2.57c	10.14	7.29b

Note. Direction of effect (DE) is the number of helping causes minus the number of hindering causes. Means within a column with different letters are discrepant according to the Newman-Keuls test ($p < .05$).

F Statistics:

	Intratask		Open Posttask		Structured	
Effects	Total	DE	Total	DE	Total	DE
Outcome	1.59	9.25***	5.69**	19.99***	.06	17.49***
Depression	.23	1.12	.48	3.75	.71	25.99***
OD	3.55*	2.55	1.57	.31	.50	4.76*
MSw	1.66	2.14	2.61	2.80	14.83	19.26

* $p < .05$
** $p < .01$
*** $p < .001$

All subjects recalled at least one intratask attribution (GM = 2.14; see Table 7). Diagnostic group and outcome interacted in the number recalled. Although Newman-Keuls testing was not significant, the depressed subjects tended to have more attributions at 50% reinforcement and less at 80% reinforcement than the controls. The discrepancy between the number of helping and hindering influences (i.e., direction of effect) is orthogonal to the total number of attributions. This analysis produced a main effect for outcome. As reinforcement increased, facilitating causes became prominent over debilitating causes.

When the raters provided the dimensional scores, then the depressed group did not differ from the control group in the MANOVA (Table 6). However, several planned comparisons were significant. First, there was a linear trend where increasing outcome levels produced higher self-serving scores, $F(3,34) = 7.21$, $p < .001$. Univariate analyses displayed the involvement of locus, $F(1,32) = 5.97$, $p < .02$; and stability, $F(1,32) = 21.30$, $p < .001$. Second and contrary to expectation, the depressed group ($M = .61$) was more self-serving on locus at 20% reinforcement than the control group ($M = .15$), $t(36) = 2.20$, $p < .05$.

In summary, the patients made spontaneous attributions during the S.E.T., however the results did not support a depressive attributional style. Indeed on the locus index, depressives were more self-serving than the controls at the

low outcome level. Finally, there was a positive linear trend for locus and stability as reinforcement level increased.

Open-ended Attributions. When the patients were encouraged to engage in a retrospective causal analysis, they self-generated an average of 3.22 attributions (Table 7). According to the Newman-Keuls test, there were fewer attributions generated at the expected medium outcome ($M = 2.08$) than at the high outcome ($M = 4.08$). In contrast to the number of recalled attributions, the diagnostic groups produced a similar number of open-ended attributions. The analysis of the direction of effect revealed the familiar linear trend wherein facilitating causes became more prominent as reinforcement increased.

When the raters provided the dimensional scores, the depressed patients were no less self-serving in the multivariate analysis than their nondepressed counterparts (Table 8). However, one planned group comparison was significant. The depressed group was less self-serving on the stability index under the 50% reinforcement condition than the control group, $t(36) = 2.38$, $p < .05$. Finally, the positive linear trend was again apparent, $F(3,34) = 3.64$. $p < .05$. As reinforcement became more dense, subjects were more self-serving on locus, $F(1,36) = 4.56$, $p < .05$, and stability, $F(1,36) = 8.85$, $p < .01$.

TABLE 8

Raters Mean Self-serving Indices for Open Posttask Attributions

Cell Means:

	Locus	Stability	Generality
Depressed			
20%	.36	.44	.56
50%	.47	.43	.54
80%	.73	.77	.50
Controls			
20%	.43	.53	.57
50%	.61	.77	.49
80%	.64	.80	.44

Note. Means within a column were not different according to the Newman-Keuls test (ps > .05).

F Statistics:

Effects	MANOVA	Locus	Stability	Generality
Outcome	1.72	2.28	4.49*	.65
Depression	1.10	.12	3.40	.25
OD	.51	.39	1.34	.11
MSw	1.00	.13	.07	.05

* $p < .05$

A different picture emerged however when the patients provided their own dimensional scores. The depressed patients were less self-serving on all three dimensions than the nondepressed patients (Table 9). Planned comparisons showed the groups differed significantly at the 20% reinforcement level for locus, $t(36) = 2.05$, $p < .05$, stability, $t(36) = 3.29$, $p < .01$, and generality, $t(36) = 2.33$, $p < .05$. In contrast to the raters' dimensionalization, the groups were not different on stability after 50% reinforcement. The positive linear trend was again apparent, $F(3,34) = 4.56$, $p < .01$. Somewhat consistent with the previous trend analysis, self-serving scores were higher in the high outcome compared to the low outcome condition on the dimensions of stability, $F(1,36) = 10.98$, $p < .01$, and generality, $F(1,36) = 4.16$, $p < .05$. However, Newman-Keuls testing revealed that the linear trend for stability and generality applied only to the depressed group and not to the control group.

In order to compare the effect of perspective (i.e., patients vs. judges) upon dimensionalization, the arithmetic mean of the three indices was analyzed. The group (2) by outcome (3) by perspective (2) repeated ANOVA revealed the previously mentioned group and outcome main effects as well as a significant group by perspective interaction (Table 10). The control group had similarly self-serving composites whether or not the dimensionalization was done by sub-

TABLE 9

Patients Mean Self-serving Indices for Open Posttask Attributions

Cell Means:

	Locus	Stability	Generality
Depressed			
20%	.31	.21a	.29a
50%	.29	.42ab	.48ab
80%	.50	.79b	.58ab
Controls			
20%	.60	.64b	.55ab
50%	.53	.64b	.66b
80%	.67	.69b	.58ab

Note. Means within a column with different letters are discrepant according to the Newman-Keuls test (ps < .05).

F Statistics:

Effects	MANOVA	Locus	Stability	Generality
Outcome	2.63*	1.63	5.67**	2.61
Depression	4.91**	8.41**	5.86*	5.14*
OD	1.55	.16	4.16*	1.39
MSw	1.00	.07	.06	.04

* p < .05
** p < .01

jects (M = .62) or by raters (M = .59). However the perspective differentiated the depressed group (M = .43 & .52, respectively). The judges were more generous in providing higher self-serving composite scores than were the depressed patients.

In summary, when patients dimensionalized their self-generated attributions, the depressed patients were less self-serving after a negative outcome than the control group. This self-defeating bias constitutes strong support for the depressive attributional style hypothesized by the reformulated model. On the other hand, independent raters failed to produce a parallel result despite the fact their dimensionalization was based on the same attributions. The depressed subjects were using different criteria to dimensionalize the attributions than the raters.

TABLE 10

The Effect of Perspective on the Posttask Self-serving Composites

Cell Means:

	Open-ended		Structured	
	Raters	Subjects	Raters	Subjects
Depressed				
20%	.45	.27	.36	.35
50%	.48	.40	.43	.42
80%	.67	.62	.65	.64
Controls				
20%	.51	.50	.61	.64
50%	.62	.61	.62	.59
80%	.63	.65	.62	.69

Note. The composite scores reflect the mean of the three self-serving indices.

F Statistics:

		Open-ended		Structured	
	df	MS	F	MS	F
Outcome	2	.24	6.78**	.20	7.41**
Depression	1	.30	8.66**	.49	18.10***
OD	2	.09	2.46	.12	4.37*
Error	36	.03		.03	
Perspective	1	.03	1.37	.00	.85
PO	2	.00	.14	.00	.37
PD	1	.10	5.13*	.01	.51
POD	2	.02	1.25	.00	.38
Error	36	.02		.01	

* $p < .05$
** $p < .01$
*** $p < .001$

Structured Attributions. The patients indicated that an average of 10.22 out of the 17 structured factors influenced their score on the S.E.T. (Table 7). The patients selected many more attributions in the structured phase than they self-generated in the previous two phases. The independent variables did not affect the total number of attributions, but they did affect the direction of effect (Table 7). Similar to the previous phases, as reinforcement increased, the attributions became predominantly facilitating. In contrast to the previous phases, the depressed group selected more negative attributions at 20% and 50% reinforcement than the control group. Indeed the control group behaved curiously at the low outcome condition, since they selected more facilitating causes than debilitating causes.

When the raters dimensionalized the structured attributions, there was a strong depressive attributional style (see Table 11). The depressed group was less self-serving on all three indices. These results contrasted with the overall lack of such a style when the raters dimensionalized the intratask and open posttask measures. Planned comparisons revealed the groups were different at 20% reinforcement for locus, $t(36) = 2.48$, $p < .05$, stability, $t(36) = 3.15$, $p < .01$, and generality, $t(36) = 3.23$, $p < .01$. Also, like the raters dimensionalization of the open posttask attributions, the goups were significantly different on stability at 50% reinforcement, $t(36) = 2.50$, $p < .01$. The multivariate linear trend to be more self-serving under higher out-

comes, $F(3,34) = 5.68$, $p < .01$, was qualified by a significant multivariate interaction. Newman-Keuls testing revealed that the positive linear trend was confined to the depressed group for all three indices. The control group's means did not vary across the outcome levels.

When patients dimensionalized their selected structured attributions, a similar depressive attributional style was observed again for all three dimensions. Planned comparisons revealed that at 20% reinforcement the groups differed on locus, $t(36) = 2.75$, $p < .01$, stability, $t(36) = 3.15$, $p < .01$, and generality, $t(36) = 2.57$, $p < .05$. Again, the depressed group was less self-serving on stability at 50% reinforcement, $t(36) = 2.91$, $p < .01$. The linear trend was present again, $F(3,34) = 7.92$, $p < .001$, at higher reinforcement levels for locus, $F(1,36) = 5.05$, $p < .05$, and stability, $F(1,36) = 21.43$, $p < .001$. Again, Newman-Keuls testing indicated the trend was limited to the depressed group.

The effect of perspective (raters vs. patients) was analyzed in a repeated ANOVA of the arithmetic mean of the three indices (Table 10). In contrast to the open-posttask analysis, there was no involvement of perspective upon the composite scores. The raters and patients dimensionalized the depressed group (Ms = .48, .47) similarly as well as the control group (Ms = .62, .64).

TABLE 11

Raters Mean Self-serving Indices for Structured Posttask Attributions

Cell Means:

	Locus	Stability	Generality
Depressed			
20%	.35a	.37a	.37a
50%	.42ab	.41a	.47b
80%	.64ab	.73b	.58b
Controls			
20%	.57ab	.63b	.63b
50%	.67b	.62b	.58ab
80%	.62ab	.69b	.55ab

Note. Means within a column with different letters are discrepant according to the Newman-Keuls test (ps < .05).

F Statistics:

Effects	MANOVA	Locus	Stability	Generality
Outcome	3.05**	2.78	7.90**	.61
Depression	5.16**	6.20*	8.81**	5.97*
OD	2.54*	2.13	3.83*	3.11
MSw	1.00	.04	.02	.02

* p < .05
** p < .01

In summary, regardless of who dimensionalized the structured attributions, the depressives were less self-serving than the control group after a negative outcome. In contrast to the open posttask measure, the observed depressive attributional style was present when either raters or patients did the dimensionalization. A perspective effect was not observed in the structured attributions.

TABLE 12

Patients Mean Self-serving Indices for Structured Posttask Attributions

Cell Means:

	Locus	Stability	Generality
Depressed			
20%	.31a	.32a	.43
50%	.39ab	.39a	.48
80%	.59ab	.73b	.59
Controls			
20%	.59ab	.60b	.71
50%	.52ab	.65b	.61
80%	.65b	.78b	.64

Note. Means within a column with different letters are discrepant according to the Newman-Keuls test (ps < .05).

F Statistics:

Effects	MANOVA	Locus	Stability	Generality
Outcome	3.81**	3.30*	12.03***	.43
Depression	4.76**	6.88*	14.67***	5.81*
OD	.94	1.26	2.02	1.17
MSw	1.00	.04	.03	.04

* p < .05
** p < .01
*** p < .001

Relationships between the Self-serving Composites. Table 13 displays the Pearson correlations (2-tailed) between the self-serving composites. All composites were significantly related with each other. Not unexpectedly, the raters' intratask composite was more highly correlated with the raters' other composites than with the subjects' composites. The correlations between the different sources (i.e., raters and patients) was low on the open-ended posttask composites (r = .46) and moderate on the structured posttask composites (r = .67). Interestingly, the patients' composites were highly consistent between the two posttask measures (r = .81) while the raters' composites were more moderately consistent (r = .61). Indeed the subjects' open-ended composite was more highly related to the raters' structured composite (r = .62) than the subjects open composite was related to the raters' structured (r = .41). The impression taken from these intercorrelations is that the perspective effect demonstrated in the open-ended posttask attributions was due to the raters not having full access to the information available to the subjects and/or processing the information differently from the subjects.

TABLE 13

The Correlations Amongst the Self-serving Composites

	Intratask	Open Raters	Posttask Subjects	Structured Raters	Posttask Subjects
Intratask:					
Raters	1.00	.69***	.34*	.45***	.32*
Open-ended:					
Raters		1.00	.46***	.61***	.41***
Subjects			1.00	.62***	.81***
Structured:					
Raters				1.00	.67***
Subjects					1.00

Note. Each composite reflects the mean of the three self-serving indices.
* p < .05
** p < .01
*** p < .001

Postevaluation. After completing the dimensional questionning, the patients completed four questions concerning the study's validity, suspicion of deception, enjoyment, and scientific value. These perceptions were not affected by group membership or reinforcement level (Table 14). Patients reported that the S.E.T. accurately reflected their ability to empathize (M = 3.90), enjoyed their participation 'quite a bit' (M = 5.24), and found the study had 'some scientific value' (M = 4.76). Most subjects indicated that they were not suspicious of a deception in the experiment (n = 30; 71.43% of the sample). These patients were 'somewhat convinced' in this belief (M = 2.97). The degree of conviction that there was no deception was not related to the independent variables (Table 15). The other 12 subjects indicated they were 'somewhat' suspicious (M = 2.55). These 12 subjects were evenly distributed across the independent variables, Chi Square (2) = 0.0, $p > .05$. None of the suspicious subjects felt the deception involved false feedback during the S.E.T. Thus even the suspicious subjects believed the reinforcement was contingent.

TABLE 14

Postevaluation of the Experiment

Cell Means:

	Validity	Suspicious	Enjoyment	Scientific
Depressed				
20%	3.71	42.86%	4.14	5.00
50%	3.71	28.57	4.29	4.57
80%	4.29	14.29	5.29	4.14
Controls				
20%	3.29	42.86	5.00	5.00
50%	3.43	28.57	5.00	4.57
80%	5.00	14.29	5.71	5.29

Note. Means within a column were not different according to the Newman-Keuls test (ps > .05).

F Statistics:

Effects	MANOVA	Validity	Suspicious	Enjoyment	Scientific
Outcome	1.27	2.08	1.29	1.48	.27
Depression	.51	.00	.00	1.84	.63
OD	.26	.49	.00	.07	.63
MSw	1.00	2.76	.22	2.53	2.44

Note. There were no significant results.

TABLE 15

Conviction that the Study did or did not Involve Deception

Cell Means:

	No Deception		Deception	
	n	M	n	M
Depressed				
20%	4	3.50	3	2.67
50%	5	2.60	2	2.50
80%	6	3.00	1	4.00
Controls				
20%	4	2.50	3	2.00
50%	5	2.80	2	2.00
80%	6	3.33	1	2.00

Note. Due to an assumption violation (unequal cell sizes), no paired posthoc comparisons were calculated.

F Statistics:

	No Deception		Deception #	
	df	F	df	F
Outcome	2	.33	2	.19
Depression	1	.02	1	.95
OD	2	.67	2	.20
MSw	24	1.81	6	2.19

The ANOVA of 'Deception' is of minimal value due to the low sample size.

Follow-up. Six days after the second session, 32 patients were readministered the BDI. The depressed group (M = 18.33) scored significantly higher than the control group (M = 4.76) (Table 16). The post BDI scores were not affected by the outcome conditions. Of the remaining 10 patients, four patients were discharged and the others were unavailable due to sickness, conflicting obligations, unwillingness, or holidays. The discharged patients, Chi Square (2) = 1.33, $p > .05$; and the other untested inpatients, Chi Square (2) = 1.20, $p > .05$, were not associated with the independent variables.

The number of days from the second session until discharge was analyzed. The depressed group (M = 21.71) stayed about the same number of days as the control group (M = 25.48) (Table 16). The number of days until discharge was not affected by the outcome conditions.

The relationship between the self-serving indices and the follow-up BDI scores was analyzed by hierarchical multiple regression. The initial level of depresssion (BDI scores) was entered first to partial out its influence (r = .62). The raters' structured measure produced a significant additional contribution (i.e., 12% of the variance) to the initial BDI scores (Table 17). Indeed of the three raters' structured indices, only the generality index made a significant contribution, F to enter (1,30) = 6.60, $p < .05$., resulting in a multiple R of .70 after the second step. The

TABLE 16

Follow-up Beck Depression Inventory Scores and the Number of Days until Discharge

Cell Means:

	BDI		Post Days	
	n	M	n	M
Depressed				
20%	5	18.00	7	28.29
50%	5	19.00	7	18.86
80%	5	18.00	7	18.00
Controls				
20%	6	2.67	7	30.43
50%	6	5.83	7	17.86
80%	5	6.00	7	28.14

Note. Means within a column were not discrepant according to the Newman-Keuls test (ps > .05).

F Statistics:

	BDI		Post Days	
Effects	df	F	df	F
Outcome	2	.12	2	.57
Depression	1	11.79*	1	.20
OD	2	.06	2	.15
MSw	26	123.78	36	754.88

* $p < .01$

other self-serving measures by either the raters or the subjects did not significantly predict follow-up BDI scores.

TABLE 17

The Prediction of Subsequent BDI Scores by the Initial BDI scores and the Self-serving Measures

Correlations Between Indicies and BDI Scores

	Recall	Open Posttask		Structured Posttask	
	Raters	Raters	Subjects	Raters	Subjects
Locus:					
BDI1	-.17	-.31	-.45	-.47	-.47
BDI2					
Simple	-.19	-.20	-.45	-.44	-.42
Partial	-.11	-.01	-.25	-.21	-.18
Stability:					
BDI1	-.27	-.24	-.25	-.36	-.49
BDI2					
Simple	-.12	-.27	-.07	-.25	-.23
Partial	.06	-.16	.11	-.04	.11
Generality:					
BDI1	.06	.14	-.59	-.66	-.66
BDI2					
Simple	.15	.02	-.28	-.66	-.55
Partial	.15	-.08	.13	-.43	-.24

Note. Initial BDI scores (BDI1) and follow-up BDI scores (BDI2).

Multiple Regression (all steps entered)

	Standardized Betas						R^2 Change
Measures	BDI1	LOC	STA	GEN	R	R^2	from step 1
Intratask	.63***	-.13	.15	.14	.64	.41	.03
Open:							
Raters	.59***	.01	-.19	-.14	.64	.41	.03
Subjects	.60**	-.24	.11	.10	.67	.44	.06
Structured:							
Raters	.33	-.00	.10	-.49*	.71	.50	.12
Subjects	.52*	-.24	.26	-.17	.67	.45	.07

* $p < .05$
** $p < .01$
*** $p < .001$

Alternative Explanation for the Results. The inclusion of manic patients in the control group may have produced an exaggerated self-serving difference between the diagnostic groups. To investigate this possibility, the remaining patients in the control group (n = 13) were compared to the depressed group. Due to small sample size, the self-serving indices were adjusted for outcome level (Table 18). The depressive attributional style was demonstrated again when the patients dimensionalized the attributions for the open posttask indices, $F(3,36) = 4.26$, $p < .05$, and the structured posttask indices, $F(3,36) = 3.37$, $p < .05$. Similarly, the style was observed when raters dimensionalized the structured posttask indices, $F(3,36) = 4.39$, $p < .01$. Univariate results showed that the locus, stability, and generality indices were significant for each attributional measure. Thus it can be concluded that the dissimilarity in attributional style between the two diagnostic groups was not due to the inclusion of the manics in the control group.

TABLE 18

Self-serving Indices of Three Diagnostic Groupings

Indices	Control Group: Manic Phase	Control Group: Other Diagnoses	Depressed Group
Patients' Open Posttask Indices			
Locus	.59	.61	.37
Stability	.66	.66	.48
Generality	.56	.63	.46
Raters' Structured Posttask Indices			
Locus	.51	.69	.47
Stability	.69	.62	.47
Generality	.52	.64	.51
Patients' Structured Posttask Indices			
Locus	.63	.56	.43
Stability	.69	.67	.48
Generality	.68	.64	.50

Note. Group means have been adjusted by outcome levels.

Discussion

Three retrospective causal analyses (i.e., subjects' open and both structured) supported the hypothesized association between attributional style and clinical depression. In accordance with the reformulated model (Abramson et. al., 1978b), depressed patients relative to psychiatric controls attributed a negative outcome (20% reinforcement on the S.E.T.) in a less self-serving manner. More specifically, depressed patients were more likely to identify hindering influences as more internal, stable, and global; and helping influences as more external, unstable, and specific. This attributional style was specific to clinical depression rather than to psychopathology as a whole. Three recent clinical studies have presented partial confirmation of a depressive attributional style for negative outcomes: Raps et. al. (1982) for locus and stability on the A.S.Q.; Gong-Guy and Hammen (1980) for locus and marginally for generality on the most upsetting recent life event; and Miller et. al. (1982) for the attributional composite only when patients dimensionalized their most stressful recent life event and only when raters dimensionalized their main attribution for a noncontingent failure task.

A depressive attributional style for positive outcomes (50% and 80% reinforcement on the S.E.T.) was generally not observed in the retrospective causal analyses. However, depressives in the 50% reinforcement condition were less

self-serving for the stability dimension on three retrospective analyses (i.e., raters' open and both structured). It is not known why stability was the only dimension affected under this outcome condition. When psychiatric patients were used as controls, the other clinical studies either did not demonstrate a depressive attributional style for positive outcomes on the A.S.Q. and an in vivo task or found the depressives were more self-serving when raters' dimensionalized their main attribution after contingent success (Raps et. al., 1982; Miller et. al., 1982). Except for the stability dimension at 50% reinforcement in the current study, Abramson et. al.'s (1978b) speculation of a depressive attributional style for successful events remains to be supported.

The depressed group was more self-serving as reinforcement increased, although not all dimensions were consistently involved. On the locus dimension, for example, they internalized helping influences under the high outcome condition (80%) to a greater extent than they externalized the hindering influences under the low outcome condition (20%). In contrast, the control group never displayed significant changes across reinforcement level in the posthoc paired comparisons. Thus the controls were able to maintain a reasonably strong self-serving bias regardless of outcome level, while the depressives were only able to achieve a strong self-serving bias at higher reinforcement levels. These results provide further support for the notion that

depressive attributional style is present only at lower reinforcement levels.

In summary, the retrospective causal attributional measures supported the reformulated model of depression for a negative outcome and to a lesser extent for medium reinforcement. This attributional style was not associated with pretesting perceptions of the task (i.e., expectations, involvement and sex-linkage). The interpretation of these results is not restricted by reliance on a few structured attributions that were strongly cued by the experimenter. In addition, the task went beyond hypothetical events to encompass a real life event - albeit an experimentally introduced one. The interpretation of the present results should be qualified in several respects. First, the task was presented as a measure of an interpersonal skill. Therefore it is not known if the depressed participants would make similar self-defeating attributions in other settings, particularly nonlaboratory ones. Second, since the retrospective analyses were initiated at the experimenter's request, the results cannot be taken as evidence for a spontaneously generated attributional style.

The pattern of results in the present study depended to a considerable extent on the assessment method. In particular, on the open-posttask measures, the depressive attributional style was observed only when the patients dimensionalized their causes, but not when raters dimensionalized the same causes. Either the trained judges did not have access

to the same information as the depressed patients or the judges' guidelines for dimensionalization were not applicable to the 'processing rules' used by the depressed patients. This phenomenological result implies that depressed patients imputed different meaning to the influences than did the judges.

The reformulated model can accomodate this phenomenological discrepancy if it is based upon differences in the access to information or its processing. However, if depressed patients were merely acquiescing to the socially undersable implications of the causal dimensions then presumably the validity of the theory can be challenged. Unfortunately, the results of the present study do not provide data which can resolve these alternative explanations.

The reformulated model emphasizes that depressive attributional style is found at the level of the generation of attributions. In contrast, the results of this study suggest that the hypothesized style occurs at the level of dimensionalization and not the production of attributions. It is interesting to note that the dimensionalization was based on structured questionning - a procedure that is suspect in the measurement of attributions. Perhaps the same suspiciousness can be applied to level of dimensionalization as well.

The greater agreement between the patients and the raters on the structured task was probably due to the fact

that the 'experimenter generated' causes were typically less ambiguous with respect to dimensionalization than the subjects' self-generated causes on the open-ended measure. Researchers should carefully distinguish between sources (i.e., participants versus raters) who generate and dimensionalize attributions.

It is interesting to compare the observed perspective effect to other clinical studies which used subjects and raters to dimensionalize attributions. Unfortunately Gong-Guy and Hammen (1980) did not compare the two sources. However Miller et. al. (1982) found a similar perspective effect to the present study on the most stressful life event, but not on an in vivo task. The discrepancy between the two studies may be due to differences in measurement procedures. Their study allowed only one main attribution where the direction of effect was consistent with the valence of the outcome. In contrast the most similar measure in the present study, open-ended posttask, allowed for multiple causality with both facilitating and debilitating influences regardless of outcome level. A more cogent explanation of the discrepancy may be associated with the series of tasks in their study (i.e., A.S.Q., life event and in vivo task). By the last task, the patients may have become sensitive to the implications of the attributional information being collected. Self-presentational concerns may have taken a more prominent role in the reporting of attributions and their dimensionalization. Impression management may have eliminated group

differences on the in vivo task when the participants dimensionalized and when the raters dimensionalized after success. The aberrant results (i.e., depressive attributional style remained after failure when the raters dimensionalized) may be due to negative affect which prevented self-presentational concerns appearing in the reporting of attributions, but not its dimensionalization by the patients. Further research is needed to investigate the effect of perspective on depressive attributional style.

No support for the attributional style hypothesis was found on the measure on intratask attributions. The reasons for this failure are not entirely clear. While it is possible that the questionning at this stage may have been insufficient to prompt retrieval of all stored attributional information, it is not clear why retrieval failure could obscure group differences, but not outcome differences as reflected in the linear trend. Second, it is possible that group differences on the recalled measure were masked due to the absence of an 'extent of influence' variable and/or the fact that only the raters and not the subjects dimensionalized the causes. However, the fact that the control group was less self-serving than depressives on the locus dimension under the 20% reinforcement condition would provide evidence against a masking interpretation. Third, it is conceivable that during the performance of the S.E.T., coping concerns were more prominent than attributional ones. There is evidence that such coping cognitions (task-relevant

thoughts) are present during problem-solving activities and shape efforts at problems solution (Diener & Dweck, 1978a,b). That such cognitions are influential in depression has been shown by Hammen and colleagues (Gong-Guy & Hammen, 1980; Hammen & Cochran, 1981; Hammen & deMayo, 1982). Perhaps group differences in such nonattributional cognitions (task-relevant strategies, efficacy concerns, etc.) prevented a depressive attributional style from crystalizing during the task.

Differences in coping during a stressful episode may be more readily identified by examining "efficacy" related cognitions (Bandura, 1977) than by assessing attributions. In the present study, efficacy-related cognitions were indirectly assessed when patients were asked to evaluate their performance immediately following the intratask interview. Consistent with the above interpretation , depressives reported that they were (a) performing less well and had (b) a lower level of success than their nondepressed counterparts (Table 4). Although these scales did not directly measure coping cognitions, they represent an indirect assessment of self-evaluation which is a component of coping cognitions.

In summary, three alternative interpretations of the lack of attributional style differences on the intratask measure were presented: (a) cues were not sufficient to prompt the complete retrieval of stored attributional information, (b) the method of assessing intratask attributions

may have masked group differences, and (c) the attributional encodings were overshadowed by more salient coping cognitions. Althougn any or all factors may have been involved, the latter interpretation strikes me as the most likely one. If this is the case, then depressive attributional style may be restricted to after-the-fact causal analyses rather than during the event itself.

An important issue that was only indirectly addressed in the present study concerns the predictive role of causal attributions in maintaining depression. The ability of attributions to predict subsequent functioning was restricted to the raters' structured generality index once initial level of depression was partialed out. Unfortunately, the analysis was limited due to the small sample size (n = 32) and the fact that only the lower reinforcement levels differentiated the groups. Also, the follow-up interval of six days was not practically useful to assess the effect of attributional style upon the longer-term duration of depressive symptoms. Nevertheless, the limited predictive ability of the causal attributions is consistent with the low correlations found by Golin et. al. (1981) over a one month interval with depressed undergraduates (see also Lewinsohn, Steinmetz, Larson, and Franklin,1981; and Peterson et. al.,1981; for similar results). In contrast, preliminary research into the etiological role of attributional style in producing subsequent depression is promising. For example, in a prospective study, Metalsky et. al. (1982) found that

students with more internal or global attributions for negative outcomes on the A.S.Q. had a more severe depressive mood reaction to receiving a low grade on an exam. Other studies employing the circumstances around childbirth as a stressful life event have resulted in mixed support for the etiological role (O'Hara, Rehm & Campbell, 1982; Manly, McMahon, Bradley & Davidson, 1982). Collectively, the results of these studies indicate that attributional style is associated with depression, however its role in the etiology and maintenance of depression needs to be further explored.

In conclusion and contrary to the reformulated model, the hypothesized depressive attributional style did not occur spontaneously during the task. Nonetheless, the depressed patients did attribute as predicted when they were asked to initiate a causal analysis after a negative event. Also, the patients did not differ in the self-generation of attributions as predicted by the reformulated model, instead they differed in the dimensionalization of their own attributions.

Experiment Two

Introduction

Most of the research assessing depressive attributional style has involved undergraduates and other nonclinical populations. This research can be broken down into three investigative approaches: in vivo tasks, hypothetical events and real life events. These approaches will be summarized below (see the General Introduction and Appendix B for extensive review).

Research using induced success or failure has generally supported the hypothesis concerning locus of causality while producing mixed evidence for the stability dimension. This research approach has not investigated the generality dimension. The presentation of hypothetical events (the A.S.Q.) to nonclinical samples has generally produced results supportive of the reformulated model, however correlations with depression have often been low. In addition, subjects may process the causes of hypothetical events differentially than real life events due to their reduced personal involvement. Finally, research using stressful life events has produced little support for the reformulated model. Partially this failure may be associated with the heterogeneity of stressful events assessed across subjects.

In light of the conceptual and methodological concerns discussed in the general introduction and in view of the qualified support for the hypotheses in normal populations, the protocol from Experiment One was administered to a sample of undergraduates.

The consistency of attributional style between clinical and normal samples has implications for the reformulated model. Depue and Monroe (1978) stated that researchers who extrapolate the results of normal samples to clinical depression are assuming a quantitative viewpoint between the two populations. These authors pointed out that there are qualitative differences between the two groups which weakens the basis for making such an extrapolation (see Appendix I). Applying the same protocol to 'mild' and clinical depressives is one procedure for testing the appropriateness of extrapolating from analogue research concerning attributional style.

Apart from the level of depression, the sexes have been shown to attribute differently to various tasks (Appendix B). Such sex differences tend to be associated with discrepancies in pretesting perceptions of expectations and involvement with the task (e.g., Rosenfield & Stephan, 1978). Generally, these differences in pretesting perceptions are associated with the sex-linkage of the specific task at hand. Males have higher expectations and involvement than females in situations involving competence and personal

traits. These sex differences are eliminated and sometimes reversed in situations involving social-emotional traits. Thus differences betweeen the sexes in causal attributions appear to be associated with their respective stereotyped characteristics or interest patterns. It was expected that females would make more self-serving attributions than males since the Social Empathy Test is associated with the female rather than the male interest cluster.

The purpose of Experiment Two was to assess depressive attributional style in a normal sample. The experimental protocol for the second session was essentially identical to the second session in Experiment One. The undergraduates were led to expect a 50% rate of success, but actually received a low (20%), medium (50%) or high (80%) level of reinforcement on a bogus task measuring 'social empathy'. A three stage procedure assessed recall of intratask attributions, open-ended and structured retrospective causal attributions. In accordance with the reformulated model, depressed students were expected to have a lessened self-serving attributional style at the negative outcome condition (20% reinforcement) for each assessment stage (Abramson et. al., 1978b). More speculatively and consistent with Seligman et. al.'s (1979) suggestion, depressed students were expected to be less self-serving at the positive outcome conditions (50% & 80% reinforcement) for each assessment stage. Females were expected to be more self-

serving than males to the extent that they differed in their pretesting perceptions of the task. Again, trained judges dimensionalized the attributions and it was predicted that they would duplicate the subjects' depressive attributional style. The effect of perspective (i.e., judges vs. students) was investigated, but no specific predictions were made.

Method

The undergraduate study involved a 3 (outcome) by 2 (gender) by 2 (affect group) design. Using the same experimental protocol as in the first experiment, students were administered the S.E.T. and then intratask and retrospective attributions were assessed.

Subjects. The undergraduates were recruited from the Psychology Department's research pool and they received one course credit for participation in each session. The depressed group was composed of students who scored 9 or above on the BDI at each session. In contrast, the control group had to score consistently below this cutoff (see Appendix I for the assessment of depression by self-report measures). All subjects had to have a raw score of 21 or above on the Vocabulary subtest (Shipley, 1940). The 114 students were divided into 10 people per cell - except for the 8 subjects in each male depresssed cell.

Apparatus. The Beck Depression Inventory (BDI; Beck et. al., 1961) is a reasonable predictor of clinical depression in normal samples. For example, Bumbery, Oliver, and McClure (1978) administered the BDI to college students. They found that if an experienced clinician administered a standard diagnostic interview the same day, then there was a strong association between the methods ($r = .77$, $n = 56$). However if the psychiatric interview took place 1-14 days after the administration of the BDI, then the correlation dropped to .30 ($n = 27$). Hammen (1980) reported that in college freshmen, the BDI had good congruence with the Hamilton Rating Scale for depression ($r = .80$) (Hamilton, 1960). Also clinically diagnosable depression was observed in half of the students previously identified as moderately depressed on the BDI (a score of 16 or more). Other studies have shown that in college samples, the BDI had a split-half reliability of .96 (Watson, Note 2) and a test-retest reliability of .75 after one month (Rehm, 1976) and .74 after three months (Miller & Seligman, 1973).

The Vocabulary subtest of the Shipley Institute of Living Scale and the Social Empathy Test (S.E.T.) were described in the Apparatus section of Experiment One. Two additional measures (depth of processing and prior depressive symptoms) were administered as fillers to allow the experimenter to score the BDI's and select subjects for participation in the second session. These two instruments were not

included in the hypotheses and they were not analyzed as part of this study.

Procedure. Undergraduates (N = 500) participated in the first session in groups of 10-30 people. They were informed that about 20% of the group would be invited at "random" to participate in the second individual session. The tests were administered in the following order: BDI, prior depression schedule, depth of processing, and vocabulary subtest. While subjects completed the latter two tests, the experimenter scored the BDI's and selected subjects above 9 and a randomly equivalent number below 9 to participant in the second session. Subjects were debriefed about the assumed association between depth of processing and mood, privately informed of their participation in the second session, and were dismissed.

The second session took place the same day or the next day at a mutually convenient time. Each of the two experimenters (female undergraduates) saw about half of the subjects in each cell. They were not aware of the subjects' BDI scores or reinforcement level. The protocol for the second session was identical to the clinical study except for one addition. The BDI was incorporated into the beginning of the session to reassess level of depressive symptomatology.

Results

The hypothesized depressive attributional style was not supported in either the intratask or open-ended posttask causal measures. Indeed, in two planned comparisons of the open posttask attributions, depressed females were more self-serving than the nondepressed females. On the structured indices, there was some limited support for the hypotheses. Specifically, compared to the controls on the structured generality index, depressed males were less self-serving at 50% reinforcement when the raters dimensionalized and depressed females were less self-serving at 20% reinforcement when the subjects dimensionalized. In contrast to the clinical study, the linear relationship between reinforcement level and self-serving indices was present for both sexes. Although the trend was positive for locus and stability, it was typically negative for generality.

Most statistical analyses involved a three (outcome), by two (sex), by two (affective grouping) MANOVA's followed up by 3 X 2 X 2 ANOVA's (.05 alpha level, 2-tailed). Due to nonorthogonal effects created by the unequal cell sizes, the most important effect, depression, was entered last into the analysis in order to provide a conservative test. For the self-serving measures, planned orthogonal comparisons investigated affective group differences within outcome levels for each sex and tested for linear and quadratic trends. Three statistical packages were used (Finn, 1976; Dixon & Brown, 1979; Nie et al., 1975).

Subjects. The data from thirty-five subjects who participated in the second session were discarded for various reasons: equipment failure (9), vocabulary score below 21 (4), initially depressed subjects who retested below 9 on the BDI (18), and failure to produce any recalled and open-ended postask attributions (4). The last category of subjects presented as overly defensive: "Nothing influenced me during the task." It seemed inappropriate to include them in the data analysis.

The remaining 114 students were assigned to the 12 cells in order to control for outcome, gender (52 males) and affective grouping (Table 19). Due to difficulties in procuring depressed males, their cells had 8 subjects each, compared to 10 subjects in the remaining cells. The depressed group had higher BDI scores (M = 12.86) than the control group (M = 3.13) (Table 19). Also, females (M = 8.42) had slightly higher scores than males (M = 7.58). Level of depressive symptoms did not interact with outcome level.

Table 20 presents the characteristics of the sample: age, enrollment year in university, marital status, vocabulary raw score, and the assigned experimenter. The typical subject was 19.57 years old, single, enrolled in first year, and had a raw score of 29.43 on the vocabulary test. The multivariate analysis displayed no effect due to outcome, sex, or group. Univariate analyses revealed that compared

TABLE 19

Cell Size and BDI Scores

Cell Means:

	Reinforcement Level						
	Low (20%)		Medium (50%)		High (80%)		
	n	BDI	n	BDI	n	BDI	Group Means
Depressed							
Male	8	11.75b	8	12.88b	8	12.75b	12.46
Female	10	12.10b	10	12.90b	10	14.80b	13.27
Controls							
Male	10	3.50a	10	2.20a	10	2.40a	2.70
Female	10	3.90a	10	3.30a	10	3.50a	3.57

Note. Cell means with different letters were discrepant according to the Neuman-Keuls test (ps < .05).

F Statistics:

Effects	df	MS	F
Outcome	2	3.89	.37
Sex	1	54.10	5.17*
Depression	1	2680.99	256.22**
OS	2	4.46	.43
OD	2	17.34	1.66
SD	1	.02	.00
OSD	2	2.41	.23
Error	102	10.46	

* p < .05
** p < .001

to males (M = 1.65), females (M = 1.18) had received fewer years of college education. Also, there was a sex by outcome interaction for age of the students. Scheffe contrasts revealed that males at the medium outcome (M = 21.55) were older than females at 50% (M = 18.75) as well as males at 20% reinforcement (M = 18.76) ($p < .05$).

TABLE 20

Sample Characteristics

Cell Means:

	Age	College Year	Single	Vocabulary	Exper. No. One
Depressed					
20%					
Male	18.63	1.25	100.00%	29.25	50.00%
Female	20.70	1.20	90.00	30.20	30.00
50%					
Male	21.50	2.00	87.50	27.13	50.00
Female	18.90	1.60	80.00	29.80	50.00
80%					
Male	19.25	1.50	100.00	28.00	50.00
Female	20.40	1.10	100.00	29.10	40.00
Controls					
20%					
Male	18.90	1.20	100.00	29.20	50.00
Female	17.90	1.00	100.00	30.60	50.00
50%					
Male	21.60	1.30	90.00	30.90	50.00
Female	18.60	1.00	100.00	32.00	50.00
80%					
Male	20.10	1.50	90.00	28.90	50.00
Female	18.40	1.20	100.00	28.10	50.00

Note. Means within a column were not discrepant according to the Neuman-Keuls test (ps > .05).

F Statistics:

	MANOVA	Age	College Year	Single	Vocabulary	Exper. No. One
O	.92	1.18	1.84	1.56	1.81	.10
S	1.72	2.52	4.47*	.02	1.90	.26
D	1.22	1.67	3.80	.95	1.99	.29
OS	.91	3.33*	.32	.52	.43	.09
OD	1.41	.43	2.87	1.28	1.84	.10
SD	1.10	3.68	.00	2.17	.50	.26
OSD	.29	.61	.11	.09	.26	.09
MS w	1.00	8.52	.43	.05	14.48	.27

Note. The effects are outcome (O), sex (S) & depression (D).
* p < .05

Pretesting. After completing the practice S.E.T. questions, students answered questions concerning performance expectations, involvement with the task, and perceived sex linkage (see Table 21). The typical subject expected to do 'medium well' (M = 3.99), and answer 21.95 of the 40 questions correctly. The test had 'medium importance' (M = 3.93) and social empathy was highly valued (M = 5.33). The charecteristics of the task were not perceived as favouring one sex over the other (M = 3.96). The multivariate analysis revealed that only gender affected these perceptions. Compared to females, males had higher performance expectations ("How well do you expect to do?"; Ms = 3.82, 4.17), but lower involvement ("How important is it for you to do well on the test?"; Ms = 4.23, 3.63). Thus in two theoretical mediators of performance (expectancy and value) and the self-serving bias in causal attributions, the sexes differed in opposite directions. Finally, subjects in the 80% reinforcement condition perceived the task as favouring male characteristics, but given the null multivariate result, this difference is considered a chance event.

In summary, males had greater expectations, but lesser involvement than females. Similar to the clinical study, level of depression and outcome did not affect pretesting perceptions.

TABLE 21

Pretesting Perceptions of the S.E.T.

Cell Means:

	Expectations		Involvement		
	Well	Correct	Importance	Value	Sex Bias
Depressed					
20%					
Male	4.75	24.38	3.75	5.13	4.00
Female	3.80	19.30	4.10	5.50	3.90
50%					
Male	3.75	20.13	3.13	5.25	4.00
Female	3.70	21.30	4.30	5.30	3.60
80%					
Male	3.63	22.00	3.50	4.75	4.25
Female	3.60	23.20	4.50	5.70	4.10
Controls					
20%					
Male	4.50	24.00	3.60	5.80	3.80
Female	4.00	21.30	4.30	5.30	4.00
50%					
Male	4.10	22.50	3.40	4.40	3.90
Female	4.00	21.90	4.20	5.40	3.90
80%					
Male	4.30	22.80	4.40	4.90	4.20
Female	3.80	20.60	4.00	5.30	3.90

Note. Means within a column were not discrepant according to the Neuman-Keuls test (ps > .05).

F Statistics:

		Expectations		Involvement		
	MANOVA	Well	Correct	Importance	Value	Sex Bias
O	1.66	2.69	.30	.62	1.01	3.27*
S	3.94**	5.96*	3.48	5.37*	3.03	1.89
D	.78	2.63	.33	.13	.18	.05
OS	1.24	1.44	2.66	.69	1.22	1.09
OD	.94	.76	.94	.02	.56	.66
SD	.53	.01	.37	.88	.13	1.12
OSD	1.29	.78	1.27	1.00	1.65	.95
MS w	1.00	.65	16.43	1.81	1.35	.21

Note. The effects are outcome (O), sex (S) & depression (D).
* p < .05
** P < .01

Manipulation Check. Level of reinforcement affected the students in the expected manner (see Table 22). At higher reinforcement levels, the response time during the S.E.T. decreased. Also, the students perceived themselves as doing better, getting more correct and having a higher level of success. There were no other significant multivariate results.

If the students had perceived the 'total number of questions' in the S.E.T. differentially, then 'number correct' would have to be divided by 'number of questions'. This procedure was not necessary.

In summary, the outcome conditions affected the students' behavior and self-report of performance in the predicted direction. In contrast to the clinical study, the depressed group did not perceive their performance as lower than the control group.

TABLE 22

Response Time during the S.E.T. and Perceived Performance

Cell Means:

	RT#	Well	Right	Items	Success
Depressed					
20%					
Male	5.05ab	1.13a	8.00a	42.50	2.13a
Female	5.66ab	1.20a	8.80a	41.60	1.60a
50%					
Male	4.74ab	3.00b	16.75b	40.00	3.50b
Female	4.84ab	3.30b	16.10b	39.80	3.40b
80%					
Male	4.23ab	5.63d	31.25d	40.00	5.63d
Female	4.19ab	4.70c	27.80cd	41.40	4.60cd
Controls					
20%					
Male	6.46b	1.80a	9.10a	39.00	1.80a
Female	4.53ab	1.30a	8.60a	40.00	1.80a
50%					
Male	4.94ab	3.10b	16.80b	39.70	3.50b
Female	3.53a	2.60b	14.90b	41.20	3.40b
80%					
Male	4.29ab	5.10cd	29.90cd	41.00	5.00cd
Female	3.88ab	5.30cd	28.60cd	40.00	5.20cd

Note. Means within a column with different letters are discrepant according to the Neuman-Keuls test (ps < .05).
Response time was measured in seconds.

F Statistics:

	MANOVA	RT	Well	Right	Items	Success
O	60.98***	4.35*	314.35***	502.37***	.29	216.54***
S	1.82	2.14	3.43	4.66*	.36	3.53
D	.45	.36	.10	.06	1.50	.00
OS	.50	.18	.29	1.65	.07	.39
OD	.88	.27	2.62	.30	2.45	.03
SD	2.06	3.91	.11	.02	.12	5.14*
OSD	1.35	.70	5.97**	1.11	1.41	1.90
MS w	1.00	3.97	.44	8.26	9.82	.47

Note. The effects are outcome (O), sex (S) & depression (D).
* p < .05
** p < .01
*** p < .001

Raters Dimensions. In a procedure identical to Experiment One, two independent trained judges dimensionalized the attributions in each phase (Appendix G). Spearman correlations (2-tailed) displayed in Table 23 were based upon the mean score for each dimension. For both recalled and open dimensions, inter-rater correlations were acceptable. Correlations ranged from .84 to .95 (ps < .001) within a given dimension and -.34 to .27 across different dimensions.

TABLE 23

Correlations Amongst Raters Dimensional Scores

Recalled Intratask Dimensions

	Rater One			Rater Two		
	Loc	Stab	Gen	Loc	Stab	Gen
Rater One						
Locus	1.00	-.26***	.26***	.90***	-.20**	.18*
Stability		1.00	-.02	-.27***	.79***	.06
Generality			1.00	.26***	-.13	.84***
Rater Two						
Locus				1.00	-.21**	.18*
Stability					1.00	-.05
Generality						1.00

Open Posttask Dimensions

	Rater One			Rater Two		
	Loc	Stab	Gen	Loc	Stab	Gen
Rater One						
Locus	1.00	-.34***	.24**	.95***	-.25**	.24**
Stability		1.00	-.03	-.33***	.90***	-.05
Generality			1.00	.24**	-.45	.90***
Rater Two						
Locus				1.00	-.25**	.27***
Stability					1.00	-.06
Generality						1.00

* p < .05
** p < .01
*** p < .001

Recalled Attributions. Most students reported they evaluated their performance while doing the S.E.T. (n = 106; 92.98% of the sample). This high rate of self-evaluation is important, because performance evaluation is assumed to be a precursor of spontaneous causal attributional processing. Subjects who self-reported evaluation were not associated with the independent variables (see Table 24).

All subjects recalled at least one attribution and they averaged 2.55 influences (Table 25). Reinforcement level did not affect number of attributions recalled, however in contrast to the clinical study, depressed subjects (M = 2.83) recalled more attributions than nondepressed subjects (M = 2.30). The linear trend was present again for the direction of effect. Facilitating causes became more prominent as reinforcement level increased.

The calculation of the self-serving indices are demonstrated for each measurement phase in Appendix H. When raters dimensionalized the scores, a depressive attributional style was not demonstrated by the overall MANOVA or the planned comparisons (ps > .05). There was a linear relationship between outcome level and the indices, $F(3,100) = 18.82$, $p < .001$. The higher the outcome level, then the higher the self-serving score on locus and stability (Table 24). In contrast, there was a reversed linear trend for generality. Index scores decreased across outcome levels (Ms = .74; .62; .40). Since direction of effect is mostly hindering at 20% and mostly facilitating at 80% reinforce-

TABLE 24

Raters Mean Self-serving Indices for Intratask Attributions and Spontaneous Evaluation of Performance during the S.E.T.

Cell Means:

	Locus	Stability	Generality	Evaluate
Depressed				
20%				
Male	.48abcd	.36	.71cd	87.50%
Female	.28ab	.51	.73cd	100.00
50%				
Male	.35abc	.54	.64bcd	87.50
Female	.34abc	.62	.59bcd	90.00
80%				
Male	.70cd	.76	.40abc	100.00
Female	.75d	.59	.54bcd	90.00
Controls				
20%				
Males	.44abcd	.40	.78d	100.00
Female	.17a	.38	.73cd	100.00
50%				
Male	.48abcd	.46	.63bcd	90.00
Female	.47abcd	.45	.62bcd	80.00
80%				
Male	.75d	.75	.29a	100.00
Female	.57bcd	.73	.38ab	90.00

Note. Means within a column with different letters are discrepant according to the Neuman-Keuls test (ps < .05).

F Statistics:

Effects	MANOVA	Locus	Stability	Generality	Evaluate
Outcome	9.00*	14.31*	10.99*	21.31*	1.67
Sex	1.24	3.53	.00	.33	.32
Depression	.58	.01	.50	.39	.01
OS	1.05	1.32	.98	1.35	.85
OD	1.31	1.44	1.23	1.52	.35
SD	.43	.73	.17	.10	.72
OSD	.63	.37	.93	.21	.18
MS w	1.00	.09	.07	.05	.07

Note. The MANOVA included the three indices only.
* p < .001

TABLE 25

Mean Number of Attributions in each Measurement Phase

Cell Means:

	Intratask		Open Posttask		Structured	
	Total	DE	Total	DE	Total	DE
Depressed						
20%						
Male	3.75b	-3.25a	5.00	-4.25a	9.63	-3.88ab
Female	2.50ab	-1.90ab	3.60	-2.60ab	9.50	-5.90a
50%						
Male	2.38ab	-1.13bc	4.00	-1.50abc	9.88	.38bc
Female	2.40ab	- .60bcd	5.70	- .90bcd	10.80	2.00cd
80%						
Male	3.00ab	1.25de	4.88	2.13e	10.63	6.63cde
Female	3.10ab	.90cde	5.50	.90cde	10.80	4.00cde
Controls						
20%						
Male	2.40ab	-1.60ab	3.60	-2.00abc	9.80	-4.60ab
Female	2.40ab	-2.00ab	3.40	-3.00ab	8.60	-3.40ab
50%						
Male	1.70b	- .50bcd	3.50	- .30bcde	10.10	2.90cde
Female	3.10ab	- .70bcd	4.90	-1.90abc	10.00	3.00cde
80%						
Male	2.30ab	1.70e	4.30	2.70e	10.80	8.40de
Female	1.90ab	.70de	3.50	1.90de	10.20	8.80e

Note. Means within a column with different letters were discrepant according to the Newman-Keuls test (ps < .05). Direction of effect (DE) is the number of helping causes minus the number of hindering causes.

F Statistics:

	Intratask		Open Posttask		Structured	
Effects	Total	DE	Total	DE	Total	DE
Outcome	.55	40.97***	2.90	39.17***	1.93	52.80***
Sex	.00	.02	.45	.96	.12	.03
Depression	4.67*	1.45	8.09**	1.57	.36	4.90*
OS	2.57	1.29	4.55*	.67	.35	.34
OD	1.52	.40	.42	.35	.01	.60
SD	2.05	3.09	.07	2.70	.83	.74
OSD	1.50	.36	1.38	1.14	.01	.71
MS w	1.73	2.48	2.95	5.69	7.85	23.78

* p < .05; ** p < .01; *** p < .001

ment, one could say that subjects tended to make internal, stable and specific ascriptions at both low and high outcomes. This tendency was not affected by gender or depression.

In summary, similar to the clinical study, subjects attributed spontaneouly during the task and the predicted depressive attributional style was not demonstrated. Also similar to the clinical study, there was a positive linear trend for locus and stability. In contrast to that study, the linear trend was negative for generality. However, 'eye-balling' the clinical study's intratask generality index shows that the negative tendency was present, although it was not statistically significant.

Open Posttask Attributions. The typical subject self-generated 4.31 posttask attributions. The significant effects were similar to the recalled attributions. Facilitating causes became more prominent at higher outcome levels and debilitating causes less prominant (Table 25). Also depressed students ($M = 4.80$) compared to the controls ($M = 3.87$) generated more attibutions. In contrast to the recalled phase, there was an outcome by sex interaction on total number of attributions. According to the Scheffe contrasts, females at 50% reinforcement ($M = 5.30$) reported more attributions than males at 50% ($M = 3.72$) and females at 20% reinforcement ($M = 3.50$) ($p < .05$).

When the raters dimensionalized the attributions, then the depressed group was no less self-serving than the control group (Table 26). One planned comparison revealed an unexpected result. Depressed females (M = .56) were more self-serving than control females (M = .37) on the generality index at 80% reinforcement, $t(102) = -2.11$, $p < .05$. There was a near significant sex by depression interaction ($p = .051$). None of the univariate indices were significant, so a multivariate score was calculated based upon the raw discriminant function coefficients. According to the Scheffe contrasts, male controls (M = 4.86) were more self-serving on the multivariate measure than female controls (M = 4.10). The male and female depressed groups (Ms = 4.41; 4.73 respectfully) were not significantly different from each other or the control groups. Based upon standardized beta weights, locus (.64) and generality (.73) were more involved in discriminating the sex by depression interaction than stability (.47).

The linear trend was replicated when raters dimensionalized the open attributions, $F(3,100) = 29.06$, $p < .001$. At higher reinforcement levels, subjects were more self-serving on locus and stability and less self-serving on generality.

When subjects dimensionalized their self-generated attributions, depressive attributional style was not demonstrated by either a depression main effect or sex by depres-

TABLE 26

Raters Mean Self-serving Indices for Open Posttask Attributions

Cell Means:

	Locus	Stability	Generality
Depressed			
20%			
Male	.31ab	.38a	.74c
Female	.29ab	.47a	.71bc
50%			
Male	.42abc	.51ab	.59abc
Female	.44abc	.54ab	.62abc
80%			
Male	.61bc	.65ab	.45abc
Female	.74c	.66ab	.56abc
Controls			
20%			
Males	.36abc	.45a	.73c
Female	.15a	.36a	.61abc
50%			
Male	.51abc	.57ab	.66bc
Female	.43abc	.50ab	.57abc
80%			
Male	.74c	.76b	.42ab
Female	.64bc	.79b	.37a

Note. Means within a column with different letters are discrepant according to the Neuman-Keuls test (ps < .05).

F Statistics:

Effects	MANOVA	Locus	Stability	Generality
Outcome	12.72***	23.23***	20.27***	14.81***
Sex	.62	1.17	.01	.53
Depression	.80	.00	.75	2.06
OS	.49	.60	.05	.66
OD	.73	.27	1.38	.82
SD	2.68*	3.14	1.26	2.67
OSD	.23	.17	.48	.08
MS w	1.00	.07	.04	.04

* p = .051
** p < .01
*** p < .001

sion interaction (Table 27). One planned comparison revealed an unexpected result. Depressed females (M = .54) were more self-serving than control females (M = .33) on the locus index at 50% reinforcement, $t(102) = -2.40$, $p < .05$. The linear trend was again apparent, $F(3,100) = 15.21$, $p < .001$. At higher reinforcement levels, subjects scored higher on locus and stability and lower on generality.

The influence of perspective (i.e., students vs. raters) was analyzed by a repeated ANOVA of the arithmetic mean of the three indices. Apart from the linear trend previously mentioned, subjects (M = .56) were more highly self-serving than the judges (M = .54) (Table 28). Thus subjects dimensionalized attributions in a more self-serving manner than objective raters. However, this result was qualified by a triple interaction. The raters scored the control males (M = .58) as more self-serving than the control females (M = .49). These results are in stark contrast to the interaction between perspective and depression in the clinical study.

In summary, a depressive attributional style was not demonstrated for self-generated posttask attributions when either raters or subjects dimensionalized. Indeed, there was some evidence that depressed females were more self-serving than their same-sex controls. Similar to the recalled measure, as outcome levels increased, subjects scored higher on locus and stability and lower on generality. Fi-

TABLE 27

Subjects Mean Self-serving Indices for Open Posttask Attributions

Cell Means:

	Locus	Stability	Generality
Depressed			
20%			
Male	.44ab	.47ab	.65
Female	.42ab	.51abc	.65
50%			
Male	.55ab	.51abc	.52
Female	.54ab	.62abc	.62
80%			
Male	.61b	.75c	.57
Female	.52ab	.67bc	.57
Controls			
20%			
Males	.50ab	.49ab	.69
Female	.33a	.41a	.74
50%			
Male	.49ab	.52abc	.54
Female	.35ab	.58abc	.58
80%			
Male	.56ab	.65abc	.59
Female	.57ab	.75c	.62

Note. Means within a column with different letters were discrepant according to the Neuman-Keuls test (ps < .05).

F Statistics:

Effects	MANOVA	Locus	Stability	Generality
Outcome	8.01***	6.06**	17.31***	6.64**
Sex	2.20	3.82*	.60	1.55
Depression	1.02	2.22	.46	1.15
OS	.47	.33	.85	.37
OD	.96	1.47	.10	.71
SD	.32	.77	.02	.02
OSD	.92	1.46	1.66	.39
MS w	1.00	.03	.03	.02

* p < .05
** p < .01
*** p < .001

TABLE 28

The Effect of Perspective on the Self-serving Composites

Cell Means:

	Open-ended		Structured	
	Raters	Subjects	Raters	Subjects
Depressed				
20%				
Male	.48	.52	.50	.54
Female	.49	.53	.42	.51
50%				
Male	.51	.53	.49	.54
Female	.53	.59	.60	.62
80%				
Male	.57	.64	.65	.63
Female	.65	.59	.61	.61
Controls				
20%				
Male	.51	.56	.46	.55
Female	.37	.49	.46	.58
50%				
Male	.58	.52	.57	.57
Female	.50	.51	.57	.61
80%				
Male	.64	.60	.67	.62
Female	.60	.65	.68	.68

F Statistics:

Between Effects				Within Effects			
Effect	df	Open	Struct	Effect	df	Open	Struct
O	2	15.50***	22.20***	P	1	4.78*	9.78**
S	1	.54	.94	PO	2	2.63	8.12***
D	1	.22	1.64	PS	1	1.03	2.45
OS	2	.89	1.60	PD	1	.21	.00
OD	2	.22	.07	POS	2	1.17	.53
SD	1	3.72	.18	POD	2	2.04	1.13
OSD	2	.63	1.72	PSD	1	6.41*	.34
				POSD	2	1.77	.42
MS b	102	.02	.02	MS w	102	.01	.01

Note. The effects are outcome (O), sex (S), depression (D) and perspective (P).
* $p < .05$, ** $p < .01$, *** $p < .001$.

nally, on the composite measure subjects dimensionalized the attributions in a more self-serving manner than the raters.

Structured Attributions. Students indicated that an average of 10.06 of the 17 supplied factors influenced their score (Table 25). Identical to the previous measurement phases, outcome did not affect total number of attributions, but it did affect the direction of effect. In contrast to both previous measurement phases, depressed subjects did not indicate more influences than controls, however they had a more hindering influences (as measured by the direction of effect) ($M = .48$) than the controls ($M = 2.52$) In contrast to the open posttask phase, outcome and sex did not affect the number of attributions.

When raters dimensionalized the structured attributions, neither sex or depression affected the multivariate measure (Table 29). In the one significant univariate analysis, depressed students ($M = .52$) were less self-serving than their counterparts ($M = .56$) on the generality index. A planned comparison revealed that depressed males ($M = .47$) were less self-serving on generality at 50% reinforcement compared to the male controls ($M = .58$), $t(102) = 2.05$, $p < .05$. The linear trend was apparent again, $F(3,100) = 30.44$, $p < .001$. Subjects were more self-serving at higher reinforcment levels for not only locus and stability but generality as well.

TABLE 29

Raters Mean Self-serving Indices for Structured Posttask Attributions

Cell Means:

	Locus	Stability	Generality
Depressed			
20%			
Male	.46ab	.47abc	.55
Female	.39a	.39a	.46
50%			
Male	.45ab	.58abcde	.47
Female	.60ab	.63cde	.55
80%			
Male	.65b	.73de	.58
Female	.57ab	.69de	.52
Controls			
20%			
Males	.45ab	.38a	.53
Female	.45ab	.43ab	.50
50%			
Male	.55ab	.55abcd	.58
Female	.55ab	.61bcde	.60
80%			
Male	.59ab	.75de	.59
Female	.64b	.78e	.59

Note. Means within a column with different letters are discrepant according to the Neuman-Keuls test (ps < .05).

F Statistics:

Effects	MANOVA	Locus	Stability	Generality
Outcome	13.12**	13.28**	43.82**	3.33*
Sex	.43	.04	.19	.43
Depression	1.84	.46	.02	4.69*
OS	.82	1.27	.59	2.39
OD	.90	.04	.91	.75
SD	.44	.10	1.23	.29
OSD	.81	2.29	.40	.90
MS w	1.00	.02	.02	.01

* p < .05
** p < .01

When the students dimensionalized the structured attributions, then neither depression or sex affected the multivariate results. However, one univariate results was significant again. Compared to the controls (M = .65), depressed students (M = .60) were again lower on the generality index. Planned comparisons revealed that depressed females (M = .58) were less self-serving on generality at 20% reinforcement than their control group (M = .72), $t(102) = 2.38$, $p < .05$. The linear trend was present again, $F(3,100) = 18.54$, $p < .001$., but only for locus and stabilty this time.

When perspective was analyzed in a repeated ANOVA of the composite scores, then again subjects (M = .59) were more self-serving than the raters (M = .56) (Table 28). This result was qualified by an interaction with outcome. The perspective effect was basically only present at the low outcome where subjects scored much higher (M = .54) than the raters (M = .46).

In summary, depressive attributional style was present only for the generality index; regardless of who dimensionalized. However, the effect upon generality was limited to depressed males at 50% reinforcement when the raters dimensionalized and depressed females at 20% reinforcement when the students dimensionalized. The positive linear trend was present again for locus and stability, but inconsistently positive for generality. In contrast to the open-ended

TABLE 30

Subjects Mean Self-serving Indices for Structured Posttask Attributions

Cell Means:

	Locus	Stability	Generality
Depressed			
20%			
Male	.50	.50a	.61
Female	.45	.50a	.58
50%			
Male	.48	.57ab	.56
Female	.60	.61ab	.66
80%			
Male	.58	.69ab	.61
Female	.62	.69ab	.58
Controls			
20%			
Males	.47	.52a	.64
Female	.51	.50a	.72
50%			
Male	.56	.53a	.61
Female	.50	.66ab	.66
80%			
Male	.56	.68ab	.61
Female	.62	.76b	.66

Note. Means within a column with different letters are discrepant according to the Neuman-Keuls test (ps < .05).

F Statistics:

Effects	MANOVA	Locus	Stability	Generality
Outcome	8.45**	8.78**	17.12**	.33
Sex	1.02	1.10	1.95	1.84
Depression	1.70	.04	.43	4.84*
OS	.53	.53	.85	.47
OD	.35	.23	.06	.62
SD	.45	.09	.77	.75
OSD	1.91	3.25*	.50	.94
MS w	1.00	.01	.02	.02

* p < .05
** p < .01

measure, the perspective effect was present only at the 20% reinforcement level instead of across all outcome levels.

Relationships between the Self-serving Composites. Table 31 displays the Pearson correlations (2 -tailed) between the self-serving composites. The correlations were generally lower than the clinical study, although all but one correlation was significant. The raters' intratask composite was low to moderately related to the raters' open-ended posttask composite (r = .55), however all other correlations with the intratask measure were minimal in strength. Similar to the clinical study, the correlations amongst the sources (i.e., raters and students) was low on the open-ended posttask (r = .51) and moderate on the structured posttask (r = .63). Both the raters (r = .40) and the students (r = .48) had a low relationship between their open and structured posttask composites. Again, the subjects' open-ended composite was more highly related to the raters' structured (r = .40), than the raters' open-ended composite was to the subjects' structured composite (r = .28).

TABLE 31

The Correlations Amongst the Self-serving Composites

	Intratask	Open Raters	Posttask Subjects	Structured Raters	Posttask Subjects
Intratask:					
Raters	1.00	.55***	.24**	.20*	.09
Open-ended:					
Raters		1.00	.51***	.40***	.28***
Subjects			1.00	.40***	.48***
Structured:					
Raters				1.00	.63***
Subjects					1.00

Note. Each composite reflects the mean of the three self-serving indices.
* p < .05
** p < .01
*** p < .001

Postevaluation. After completing the dimensionalization, subjects answered questions about the validity of the S.E.T., their suspiciousness of deception, their enjoyment, and the 'scientific' value of the study (Table 32). The undergraduates reported that their score on the S.E.T. moderately reflected their ability to empathize (M = 3.75). They enjoyed their participation somewhat (M = 4.69) and they felt the study had some 'scientific' value (M = 4.69). These perceptions were affected by outcome level. In particular, subjects who received lower reinforcement reported that the S.E.T. was a less accurate measure of their ability to empathize and they tended to be more suspicious of deception ($p < .07$). Thus students who received more negative outcomes tended to perceive their performance on the S.E.T. as less personally relevant. In the clinical study, outcome level did not affect the postevaluations.

Most students were not suspicious of deception (n = 78; 68.42% of the sample). These subjects were 'somewhat' convinced of this belief (M = 2.74). The degree of conviction that there was no deception was not associated with the independent variables (Table 33). Those subjects who were suspicious of deception (n = 36) indicated they were 'somewhat' convinced about this belief (M = 2.74). This perception was not affected by level of depression or reinforcement, however males (M = 2.29) were more convinced than females (M = 1.73) (TABLE 33). When asked to explain their suspiciousness, only 8 subjects (half of whom were de-

TABLE 32

Postevaluation of the Experiment

Cell Means:

	Validity	Suspicious	Enjoyment	Scientific
Depressed				
20%				
Male	2.38a	62.50%	4.38	4.25
Female	2.80ab	20.00	3.70	4.10
50%				
Male	4.25c	25.00	4.63	4.38
Female	3.60abc	50.00	5.00	3.90
80%				
Males	4.63c	37.50	5.00	4.63
Females	4.50c	10.00	5.00	4.50
Controls				
20%				
Male	3.20abc	40.00	4.70	4.40
Female	2.80ab	60.00	4.90	4.90
50%				
Males	3.90bc	40.00	4.40	3.90
Female	4.00bc	.00	4.70	4.60
80%				
Male	4.50c	30.00	4.90	4.40
Female	4.50c	10.00	5.00	4.30

Note. Means within a column with different letters are discrepant according to the Newman-Keuls test (ps < .05).

F Statistics:

Effects	MANOVA	Validity	Suspicious	Enjoyment	Scientific
Outcome	6.38**	26.31**	2.76	2.17	.70
Sex	.94	.34	2.73	.05	.12
Depression	.30	.41	.24	.54	.51
OS	.35	.13	.32	.65	.18
OD	.99	.47	1.06	2.18	1.03
SD	.58	.00	.01	.48	2.35
OSD	1.69	1.36	4.80*	.45	.68
MS w	1.00	1.09	.20	1.34	1.14

* p < .01
** p < .001

pressed) questioned the validity of the feedback received during the S.E.T. These eight subjects were evenly distributed across the outcome levels, Chi Square (2) = 3.50, $p > .05$.

TABLE 33

Conviction that the Study did or did not Involve Deception

Cell Means:

	No Deception		Deception	
	n	M	n	M
Depressed				
20%				
Male	3	2.00	5	3.20
Female	8	2.88	2	1.00
50%				
Male	6	2.67	2	2.00
Female	5	2.80	5	1.80
80%				
Male	5	2.80	3	1.67
Female	9	2.67	1	3.00
Controls				
20%				
Males	6	2.83	4	2.50
Female	4	2.75	6	1.83
50%				
Male	6	2.50	4	2.00
Female	10	2.40	0	
80%				
Male	7	3.00	3	1.67
Female	9	3.22	1	1.00

Note. Due to an assumption violation (unequal cell sizes), paired posthoc comparisons were not calculated.

F Statistics:

	No Deception		Deception	
	df	F	df	F
Outcome	2	1.16	2	2.25
Sex	1	.12	1	5.27*
Depression	1	.26	1	1.41
OS	2	.22	2	2.43
OD	2	1.06	2	.23
SD	1	.17	1	.44
OSD	2	.68		a
MS w	66	.90	26	.70

a The triple interaction was not calculated.
* $p < .05$

Discussion

The hypothesized association between depression in normals and attributional style after a negative outcome received minimal support. Only one of 30 planned comparisons under 20% reinforcement reached significance. Specifically, depressed females dimensionalized the structured generality index in a less self-serving manner than their controls. In view of the fact that there were no significant multivariate results involving depression, the one significant comparison would appear to be a chance event. The absence of a depressive attributional style for a negative event is consistent with the null results in other nonpsychiatric studies (e.g., Barthe & Hammen, 1981), but is inconsistent with most studies using in vivo tasks (e.g., Klein et. al., 1978) and many hypothetical event studies (e.g. Seligman, 1979). In particular, the present results contrast sharply with Kuiper (1978) who found that depressed female undergraduates internalized failure to a greater extent than their controls on a task very similar to the S.E.T.

A depressive attributional style for positive outcomes (50% and 80% reinforcement) received minimal - and at that contradictory - support on the intratask and retrospective measures. Three planned comparisons were significant: (a) the raters dimensionalized male depressives as less self-serving than the controls on the structured generality index

at 50% reinforcement. (b) Contrary to prediction, the raters dimensionalized depressed females as more self-serving than the controls on the open posttask generality index at 80% reinforcement; (c) also contrary to prediction, depressed females dimensionalized the open-ended locus index in a more self-serving manner than the controls at 50% reinforcement. Given that there were no significant multivariate results involving depression and there were 60 planned comparisons for positive outcomes, the three significant comparisons must surely be considered a chance result also. The absence of a depressive attributional style for positive outcomes is consistent with some studies using in vivo tasks (e.g., Litman-Adizes, Note 1). In particular, Kuiper (1978), using a very similar task, found no differences in depressed females for locus or stability at the medium or high outcomes. However, many other studies using in vivo tasks found evidence for a positive attributional style (e.g., Klein et. al., 1976; Tennen, 1976; Rizley, 1978, Experiment One). The results with the A.S.Q. have been very mixed (e.g., Seligman et. al., 1979; Blaney et. al., 1980). The only real life study to assess positive outcomes also demonstrated a depressive attributional style (Harvey, 1981). It will be assumed for the rest of the discussion that the hypothesis of a depressive attributional style in the present undergraduate study was unsupported and the few significant results involving depression reflected random variation in the data.

The absence of a depressive attributional style may be due to: (a) an insensitive measurement procedure, (b) the level of depression sampled and (c) the methodological innovations. These reasons will be considered in turn.

The Social Empathy Test and the attributional measurement procedure used in this study may not be sensitive to the influence of affective state upon attributions. There are several considerations for discarding such a notion. It is not apparent why a depressive attributional style would not emerge when the self-serving bias was readily apparent (i.e., the linear trend). Also, a very robust depressive attributional style for negative outcomes was displayed in the clinical study which had a much smaller sample size (N = 42) and hence a less powerful test of the hypotheses than the undergraduate study (N = 114). It would appear safe to discard the notion of an insensitive measurement procedure.

The second explanation to account for the null results is that the sampling procedure may have selected students who were insufficiently depressed to display a 'depressive' attributional style. When the mean BDI scores are compared, the undergraduates (M = 12.86) were much more mildly depressed than the depressed inpatients (M = 29.10). The notion of an insufficient level of depression is supported by the following observations. First, the depressed students did not perceive their performance on the S.E.T. as poorer than the control group. Second, both the depressed and control students were more self-serving than the raters on the

open-posttask measure and at the low outcome on the structured posttask measure. Finally, as reinforcement level decreased both depressed and control students perceived their score on the S.E.T. as less accurately reflecting their ability to empathize. Each of these observations was not to be found in the clinical study. The implication of these facts is that self-protective processes and/or public image management were much more in evidence in the 'depressed' college students than in the depressed inpatient sample.

The possibility that a more extreme groups analysis of the undergraduate results would produce the hypothesized results was investigated. Only 35.19% of the depressed undergraduates (n = 19) scored at or above the clinical sample's cutoff of 14 on the BDI. The self-serving measures were reanalyzed for three levels on depression on the BDI (0-8, 9-13, 14-27). Gender of the subjects and outcome were entered as covariates. The highly depressed group (M = 17.32 on the BDI) was not less self-serving than the nondepressed group on any multivariate or univariate analysis. Thus the null results do not appear to be due to an insufficient level of depression.

The present study introduced various methodological innovations compared to previous research using in vivo tasks (e.g., open-ended questionning involving simultaneous helping/hindering factors, numerous structured factors, no evaluative commentary from the experimenter). A third explana-

tion for the null results is that the current procedures made it more difficult for a depressive attributional style to appear in a normal population. An even more radical explanation is that previous in vivo studies produced 'artifactual' data. Whatever the manner in which the third explanation is taken, it leaves wide open the question of what is the most 'meaningful' procedure to measure depressed attributional style. Presumably prospective studies (e.g. Metalsky et. al., 1982) will assist researchers in sorting out this dilemma.

Certainly, we are left with the impression that 'mildly' depressed people attributed differently than clinical depressives when they were presented with the same experimental situation. This conclusion supports the notion of qualitative differences between the two groups and suggests the inadvisedness of extrapolating from one to the other. More research is needed that applies the same protocol to both populations.

The positive linear trend for locus and stability observed in the clinical study was present again in all measurement phases. However, the trend applied to both the depressed and nondepressed subjects and not just to the depressed group as occurred in the clinical study. As reinforcement increased, the students became more self-serving on the two dimensions. Since attributions are mainly hindering at 20% reinforcement and mainly helping at 80% reinforcement, a simplified conclusion can be presented: sub-

jects attributed the low outcome to external and unstable causes to a lesser extent than they attributed the high outcome to internal and stable causes. Being more self-serving after a high versus a low outcome on locus, stability and on one measure for generality is consistent with the self-serving bias observed in achievement research (see Bradley, 1978; Zuckerman, 1979). In contrast, the trend for generality was negative for the intratask and open-ended posttask measures while for structured attributions, it was positive when the raters dimensionalized and absent when the students dimensionalized. Thus on most measures, subjects attributed the low outcome to specific causes to a greater extent than they attributed the high outcome to global causes. The mainly 'self-defeating' bias for generality may be associated with the perceived characteristics of the S.E.T. Recall that in the postevaluation, the subjects who received lower reinforcement perceived their performance on the S.E.T. as less personally relevant. Given such a perception, it would be logical for low scoring subjects to ascribe specific causes to hindering influences (i.e., 'The task has limited implications for my daily living.').

The assumption that the S.E.T. is associated with the feminine stereotyped characteristics (i.e., interpersonal/social) was not supported (see Broverman et. al., 1973; Maccobby & Jacklin, 1974). Both sexes perceived the task as measuring a characteristic that was shared by the sexes. Consistent with this perception, gender produced no signifi-

cant multivariate differences - except for the raters' open posttask measure. Specifically, the control males were more self-serving than the control females. Previous researchers have demonstrated that higher expectations and involvement are associated with a greater self-serving bias (e.g., Rosenfield & Stephan, 1978). It would appear that the opposing influences of higher expectations and lower involvement in males compared to females counterbalanced each other and generally eliminated sex differences in causal attributions.

In conclusion, after a negative outcome, the hypothesized depressive attributional pattern was demonstrated in the clinical study, but it did not appear in the nonclinical study. The evidence suggests that the discrepancy was not due to the level of mild depresson sampled. Instead, it appears that given the same experimental situation the depressed undergraduates attributed differently than depressed patients.

General Discussion

The current experiments point out the necessity of testing hypotheses concerning psychopathology on a clinical population. Although normal samples may be more readily accessible than clinical samples, the latter may produce divergent results from the former. In the present clinical study, a depressive attributional style was observed in retrospective causal analyses at lower reinforcement levels. The absence of parallel attributional style in the undergraduate sample may be due to the mild level of self-reported depressive symptoms or differences between normal and clinical depression in the reporting of causal attributions. Future research efforts will be needed to elucidate the relationship between depressive attributional style in clincal and normal populations.

The current research was restricted to a limited area of possible cognitive mediators of depression. Depression may also be associated with (a) other causal dimensions (e.g., characterological blame, intentionality; Peterson et. al., 1981; Gong-Guy & Hammen, 1980), (b) noncausal attributions (e.g., expectancy of the event and uncertainty resulting from it; Gong-Guy & Hammen 1980; Hammen & Cochran, 1981), and (c) nonattributional cognitions (e.g., self-efficacy, coping concerns, self-schema; Wong & Weiner, 1981).

In addition, the contextual aspects of stressful events themselves may be differentailly associated with depression (e.g., Hammen & Mayol, 1982). Cognitions associated with the predisposition to depression and the precipitation, maintenance and resolution of depression are turning out to be complex and multifaceted.

The role of current mood on depressive information processing has not been related to causal attributions in the current published literature. It is interesting to consider the relevance of the present findings to such a framework. In particular, the results of the clinical study can be examined in light of Teasdale's (in press) recasting of Bower's (1981) cognitive-emotion semantic network model of information processing. According to this framework, cognitive concepts and structures are activated by a variety of means, but most notably by mood. It is assumed that stored cognitive structures (self-schemata) and processes (e.g., attributions) have been encoded along with associated mood states. The arousal of given mood state, through whatever means, then activates the associated cognitions above the threshold of awareness. In this view, a person who is depressed encodes and retrieves self-relevant information in a way that is markedly different from when he/she is not depressed (i.e., depressive affect may lead to depressive cognitions). Teasdale and colleagues have provided considerable evidence for the view that depressive affect enhances

the retrieval of mood-congruent episodic memories (e.g., Clark & Teasdale, 1982; Teasdale, Taylor & Fogarty, 1980). While this research has not been directly concerned with the activation of attributional tendencies, the implication that such tendencies may be activated by depressive and other unpleasant affective states clearly follows from this theoretical orientation. The implications of this hypothetical framework for theories of attributional style and for the present results in particular are considered below.

Recall that the present clinical study and other clinical studies (e.g., Gong-Guy & Hammen, 1981; Raps et. al., 1982; Miller et. al., 1982) generally demonstrated a depressive attributional style for negative outcomes but usually not for positive outcomes. Why this should be so follows nicely from the associative network hypothesis previously mentioned, if it is assumed that (a) greater amounts of negative affect are generated under low relative to high reinforcement conditions and (b) that such induced affect activates the expression of stored negative attributional tendencies. Under medium and particularly the high reinforcment conditions, outcome driven affect is presumably lower; thus only some of the stored negative attributional tendencies were activated above the threshold of awareness. Wong and Weiner's (1981) finding that people ask "why" questions primarily when they encounter failure fits quite nicely with this analysis. Also recent findings concerning depressive self-schemata are consistent with the emphasis on

affect playing a critical role in the activation of congruent cognitive structures (Davis & Unruh, 1981; Hammen, Dyck & Miklowitz, Note 3). The absence of attributional style differences on the intratask measure in the clinical study may be interpreted within the associative network hypothesis. Perhaps the requirements of the task were such that negative affect did not increase sufficiently to activate the self-defeating attributional tendencies. If this were the case, then negative affect only became prominant after the task resulting in the observed attributional differences.

The implications of the aforementioned analysis for theories of attributional style and depression are relatively straightforward. Specifically, the analysis suggests that dysfunctional cognitions may not be continuously active. This is suggested by a number of longitudinal studies which indicate that dysfunctional thoughts are not continually present when the individual is not in a depressed state (Kranz & Hammen, 1979; Lewinsohn, 1981). Also recent unpublished findings are consistent with this view. For example, current depressed mood, but not prior depression, was associated with depressive attributional style as indexed by the A.S.Q. (Dyck, Watson & Dresel, Note 4). This of course does not rule out the notion of a latent vulnerability factor for depression that is activated by stress (e.g., Metalsky et. al., 1982). Nor does it rule out a strong maintenance func-

tion for attributional and other cognitive processes (Lewinsohn, et. al., 1981). Nonetheless, it may mean that more emphasis should be placed on a bi-directional relationship between cognition and affect.

Appendix A

Causal Attributions

Attributions in Social Psychology

Attributional conceptualizations have been very influential within social psychology. Harvey and Smith (1977) summarized an attributional interpretation of such diverse areas as freedom and choice, emotions, person perception, attraction, aggression, attitudes and social interaction. Major theses and reviews may be found in Bem (1967,1972); Heider (1958); Harvey, Ickes and Kidd (1976, 1978); Jones and Davis (1965); Jones, Kanouse, Kelley, Nesbitt and Valins (1972); Kelley (1967, 1973); Shaver (1975); and Weiner (1974). Brehm (1976) and Kopel and Arkowitz (1975) discussed the implications of attributions for clinical practice.

Causal attribution refers to the assignment of causes to events (Heider, 1958). Its assumed that people constantly make attributions concerning salient events in their lives (e.g., 'Why did that event occur?'). Salient events may include one's own beliefs, emotions, behavior and outcomes of one's behavior. Alternatively, the attributional question may be applied to another person, group of people or other environmental events. It is thought that causal

attributions improve people's ability to explain past events, to predict future occurrences and at times to improve their control over events.

Causal attributions are not necessarily the veridical cause of the event in question, rather they are the perceived 'cause'. Attributions are assumed to be causally linked to a salient event and its subsequent consequence(s). Thus they are not considered to be secondary phenomenon, rather they need to be assessed in order to explain and accurately predict people's reactions to events.

The primary concern of the present study is what causes people use to explain their performance at a problem solving task. Hypotheses concerning achievement attributions have been largely proposed by Weiner and his associates (Weiner, 1972, 1974; Weiner, Frieze, Kukla, Reed, Rest and Rosenbaum, 1972), who in turn based their work upon the theoretical discussions of Heider (1958) and Rotter (1966).

The Attributional Process, Awareness and Verbal Reports

The relationship between awareness, verbal reports and attributions should be elaborated. As suggested by Spielberger (1962), awareness will refer in a general way to the conscious experience (i.e., the thoughts, ideas, and hypotheses of the subjects). Unfortunately, awareness is difficult to operationally define, so the concept is suspect in terms of its scientific status. Awareness is typically in-

fered from verbal reports, but the relationship between the concept and its measure is complex and presently unspecified.

Heider (1958) suggested that the raw material upon which a causal attribution is based need not be in the perceiver's awareness. However, apparently the outcome of the process (i.e., the causal attribution, is within the perceiver's awareness). This assumption has several important implications. Failure to report a certain attributional factor implies the absence of various consequences that are theoretically associated with the respective dimensional aspects of that factor. Failure to report any attributional factors implies that no attributional processing occurred or at least the process was not completed. Third, the report of a certain attributional factor necessarily implies the presence of its theoretical consequences. Nonetheless, these three implications must be qualified by any distortions between the private attributions and the public report. Presumably the verbal measure may be distorted by (a) an inability to accurately describe one's awareness, (b) memory loss, and (c) demand characteristics, and (d) public presentational strategies (see Bradley, 1978).

Attributional Research Methodology

In order to assess causal attributions, the researcher provides carefully selected information concerning an event and measures the subjects' causal attributions. In the typical research paradigm used in social psychology, the event is simulated and the attributions are assessed via structured or closed-ended questions. This methodology has various advantages and disadvantages. Procedures for presenting events and measuring attributions will be discussed and appraised.

In most studies, the event is simulated and the subjects role-play their reactions to, say, a written description of the event. Simulated situations allow for efficient within-group designs and avoid ethical dilemmaes surrounding deception experiments. However, there is reason to believe that role-played in comparison to in vivo experience produce differential reports of attributions. Two studies have compared the two procedures and found that subjects who experienced real tasks tended to attribute success more internally and failure more externally than subjects who role-played their reaction to the same task (Fontaine, 1975; Frieze and LaVoie as cited in Frieze, 1976b). Thus in these studies, self-serving tendencies were more prominent in the in vivo task. Fontain suggested that the simulated situations which are marked by a minimum of information and repeated presentations of different events sets up strong constraints for

the subjects to be logical. In contrast, 'ego-oriented' motives probably play a larger role in in vivo situations.

Researchers have measured attributions in three ways. Structured or closed-ended questionning methods are by far the most popular (e.g., Bar-Tal & Frieze, 1976). Open-ended questionning has been used in fewer studies (e.g., Beers & Lowe, 1978; Diener & Dweck, 1978; Frieze, 1976; Hanusa & Shulz, 1977). Finally, the subjects in one study were asked to 'talk aloud' while performing a task and the verbal protocol was coded for attributions (Diener & Dweck, 1978). These three measuring techniques will be termed, respectfully, structured, open-ended and talking aloud. Each technique will be appraised in terms of its advantages and disadvantages.

The discussion of structured measures will be limited to unipolar ratings due to their psychometric superiority to other structured measures, e.g. percentage assessment, choice of one cause, bipolar ratings and paired comparisons (Elig & Frieze, Note 5). In the unipolar measurement of attributions, the experimenter might ask the subjects to rate, say on a seven-point scale, the extent to which each factor in a list caused the success or failure. This procedure has various psychometric advantages over unstructured measures (Elig & Frieze, Note 5). There are no coding problems, so reliability should be higher for structured responses. Structured measures more closely approximate interval or ra-

tio measurement. They have larger scale ranges, so structured measures suffer less from attenuation by limited dichotomies. Finally, structured measures allow for degrees of attributions along causal dimensions rather than their presence or absence or frequency counts.

Structured measures have four major disadvantages: (a) The request for a causal analysis originates from the experimenter. This procedure provides no indication that the subjects spontaneously initiated attributional processing. Also, the origin of the initiation of causal analysis may affect criteria for the selection, rejection, and acceptance of causal hypotheses. (b) The subjects may be cued from the list of factors to consider causes they would not have personally considered. (c) Although the researcher may consider the list of factors important, the list may not contain factors that are important to some subjects. The researcher can not be certain that the list of factors provided to the subjects is similar to the factors privately used by subjects, especially when measuring attributions in new situations or with different populations of subjects. (d) Inadvertantly the researcher may misplace causal factors along the various dimensions. For example, "effort" is typically classified as unstable as in 'I didn't try hard enough', however the subject may have interpreted "effort" as 'I am a lazy person' which would be classified as stable. Externally initiated causal analysis, cueing, a limited set of fac-

tors, and misclassification may lead inadvertantly to artifactual findings.

An open-ended measure might be worded, 'Why did you have trouble (do well) on these problems?'. Such questionning circumvents most disadvantages of structured questions while sacrificing psychometric concerns as demonstrated in the multivariable-multimethod study by Elig and Frieze (Note 5). Nonetheless, the subjects' causal analysis is still initiated by the researcher. Two experiments by Beers and Lowe (1978) revealed a subtle cueing distinction between structured and open measures. Subjects used both consensus and distinctiveness information when answering structured questions, but they used consensus information alone when responding to the open question. Presumably the former measure induced a logical and comprehensive problem solving approach to the expression or public presentation of attributions. Comprehensive analysis may occur in circumscribed situations (e.g., the deliberation of a court jury), but such analyses may seldom occur elsewhere. In everyday attributional formation, the perceiver likely employs heuristics to select plausible causes and uses his own criteria for sufficiency of the explanation. In a similar vein, Kelley (1972) suggested that people do not always use a complete ANOVA causal analysis, but they may employ causal schemata in expeditious, everyday attributions. Structured questionning may measure how comprehensive attributions can

be formed while open questionning may assess how attributions are formed (Beers & Lowe, 1978).

Like open measurement, attributions verbalized during a 'talking aloud' task suffer from coding problems and various psychometric concerns. Also, the 'talking aloud' behavior may introduce unknown artifacts during the task. Nonetheless, the intratask measurement of attributions has a number of advantages. The subjects will have meager indication concerning which variables are of experimental interest. Attributional processing is initiated by the subject rather than the experimenter. The timing of the verbalized attributions may be of theoretical importance, and the attributions can be analyzed in relation to other verbalizations. Some subjects may not spontaneously report attributions during a task; perhaps indicating that attributional processing has not occurred at all or at least was not completed.

In order to provide a comprehensive assessment of depressive attributional style and to assess the effect of type of measurement, the present research presented an in vivo event and employed open- and closed-ended questionning of retrosective causal attributions. Due to concerns about the ability of psychiatric inpatients to verbalize attributions while performing a task, spontaneous intratask attributions were assessed by recalling the attributions after completing the task. The recall of intratask attributions has not been assessed previously in published attributional research. However, Ericsson and Simon's (Note 6) suggested

procedures for retrosective questionning of intratask cognitions were adapted for the present research. (a) Probe the subjects immediately after completing the task so as to reduce the loss of short term memory. (b) The questionning should make clear that memory of thoughts during the task should be the only source for the answer. (c) Probably the subjects need to be explicity instructed to provide a relatively complete recall or else they are unlikely to do so. (d) General questions are superior to specific questions, since the latter may provide background information and enhance the possibility of intermediate processing or guessing.

Attributional Dimensions

Given the diversity of possible causal explanations, it has been necessary to develop causal dimensions along which attributions can be categorized. Three dimensional systems will be reviewed: the locus-stability-intentional system of Weiner and his associates (Weiner, 1972, 1974; Weiner et al., 1972; Weiner, Russell & Lerman, 1978), the broadened definition of stability used by Elig and Frieze (1975), and the helplessness-generality-stability system of Abramson et al. (1978). The systems not only vary as to the dimensions included, but also the definitions of dimensions with the same name do not coincide. In all three systems the dimensions are considered to be orthogonal to each other and al-

though each dimension is considered to be a continuum between dipoles, for ease of discussion the dimensions are referred as dichotomies.

Weiner (1974) and his associates have outlined a three dimensional system. Locus of causality refers to where the person perceived the origin of the force which produced the event in question. This dimension has been traditionally termed locus of control, but the term, locus of causality, more accurately captures the definition. The cause may be perceived as due to factors within the person (i.e., internal) or something outside the person (i.e., external). The stability dimension refers to factors that are stable or invariant versus unstable or variant. Weiner has not elucidated whether stability is restricted to future experiences with the same task or is relevant to other tasks. The final dimension, intentionality, was introduced by Rosenbaum (Note 7), but it has received limited theoretical or research attention. Intentionality refers to the person's voluntary control over internal causal factors and other people's voluntary control over external causes. Litman-Adizes (Note 8) was critical of this conception, because it connotes will and desire and confounds it with the person's capacity to control causal factors and so exercise one's will. Litman-Adizes suggested a nonorthogonal dimension, controllable, which refers to the person's ability to control internal but not external causes.

Elig and Frieze (1975) developed the Coding Scheme of Perceived Causality, a system for coding open-ended attributions along the dimensions of locus, stability and intentionality. The first and last dimensions were defined in an identical manner to Weiner et al.'s (1972) system. Elig and Frieze stated that conceptually and operationally Weiner and his associates defined the stability dimension as the variability of causes over repeated experience with the same task. Elig and Frieze broadened the definition of stability to include the extension of behavioral space (i.e., different tasks) as well as time. A stable attribution referred to the invariance of a causal factor from one situation to a criterion situation. Thus researchers need to define the relationship between the criterion situation and the original situation where the attributions were made. If the criterion situation is defined as the same task later in time, then stability is identical to Weiner et al.'s (1972) conception of stability as interpreted by Elig and Frieze.

Abramson, Seligman, and Teasdale (1978b) presented a three dimensional system as part of a reformulated learned helplessness model of depression.[2] Their model was applied only to noncontingent outcomes, especially aversive situations, but presumably their dimensional analysis can be ex-

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[2] Miller and Norman (1979) independently developed a causal dimensional system to account for learned helplessness: locus, stability (i.e., cross-situtional generalization), specificity (i.e. cross-task generalization) and subjective importance.

tended to all outcome situations. Personal helpless represents situations where the person expects the outcome will not be contingent on any response in his repertoire but the outcome is contingent on at least one response in the repertoire of at least one relevant other. Universal helplessness represents the situation where the person expects the outcome to be noncontingent for any response in his repertoire and the repertoire of any relevant other. The self-other dichotomy is the criterion for personal helplessness. This conception of personal-universal-helplessness is similar to Bandura's (1977) conception of efficacy and outcome expectations. Operationally, personal helplessness is defined as a personal belief that uncontrollable outcomes are more likely to happen to him/herself than to relevant others. Universal helplessness is defined as a personal belief that he/she is no more likely to receive the uncontrollable outcomes than relevant others.

Abramson et al. (1978b) indicated that personal-universal attributions are based on consensus-type information (i.e., self-other dichotomies). This conception is unfortunate because: (a) people seem to make limited usage of consensus information when forming attributions (McArthur, 1972, 1976), and (b) even if in general people used self-other information, no allowance is made for some people to occasionally disregard self-other information. Specifically, events can be conceived where a causal factor might be scored as personal-external or universal-internal. For ex-

ample, in a failure situation, a person may perceive a self versus other dichotomy in the likelihood of outcome and be personally helpless but attribute the cause to an external factor such as 'I was distracted by noise in the hall'. Alternatively, a person may perceive him/herself and relevant others as failing and he/she would be universally helpless but it is possible to attribute the cause internally (e.g., 'I am really smarter than my peers, but I was tired and couldn't concentrate'). Abramson et al. suggested that personal-universal helplessness is operationally equivalent to the conception of factors lying "withing the skin and outside the skin" that is used by various attribution theorists. In this author's opinion it is a mistake to equate personal-universal helplessness as defined by Abramson et. al. with the locus of causality dimension.

The generality dimension refers to the implications causal factors have across situations (e.g., different tasks). A global attribution implies the factor will be present in other situations. A specific attribution implies the factor will be present in only the original situation. The stability dimension refers to the temporal chronicity of causal factors. A stable attribution implies the factor will be long-lived or recurrent, whereas an unstable attribution implies the factor will be short-lived or intermittent. Thus generality has situational implications with no reference to temporal considerations and stability has tem-

poral implications with no reference to situational considerations. Abramson et al. (1978b) have interpreted Weiner's (1974) stability dimensions differently than Elig and Frieze (1975).

Abramson et al. (1978b) mentioned a fourth dimension of controllability which referred to the amount of control the person has over a causal factor. They suggested that the phenomena of self-blame, self-criticism and guilt found in depressed people might result from the attribution of failure to factors that are perceived as controllable. Unlike Litman-Adizes' (Note 8) nonorthogonal dimension of controllable factors, controllability refers to causes located either internally or externally.

For the purposes of the present research, locus will refer to the perceived origin of the causal attributional factor (i.e., internal/external to self). Stability will refer to the perceived probability that the factor will remain influential in future reoccurrences of the same event. Generality will refer to the perceived pervasiveness of the influence in other aspects of the person's daily life. It is interesting to note that research into the reformulated model of depression (e.g., A.S.Q.; Seligman et. al., 1979) has often operationalized the three dimensions along the above lines.

Appendix B

Attributional Style

Attributional theorists have emphasized the rational usage of information in the formation of causal attributions (e.g., consensus, distinctiveness and consistency). In contrast, attributional style refers to a characteristic dimensional pattern that spans across various events and deviates from the rational deployment of information. Presumably such a departure would be due to the influence of motivational or emotional factors. The following sections will review some of the evidence concerning attributional style: (a) the self-serving bias, (b) gender differences and (c) depression. Unless otherwise noted, all studies used in vivo task situations and structured questionning of attributions usually concerning the factors of ability, effort, task difficulty, and luck. The dimensions of locus of causality and stability will refer to Weiner et al.'s (1972) conceptualization.

Self-serving Bias

There is substantial evidence that undergraduates attribute success to internal factors and attribute failure to external factors. In other words, people tend to be more 'self-serving' after success than after failure. In his review of achievement research, Zucherman (1979) reported that 71% of 38 studies found that subjects took more responsibility for success than failure. Accounting for the underlying process has raised considerable debate in the literature. Evidence for the competing explanations (i.e., informational and motivational) will be summarized below.

Miller and Ross (1975) suggested that the 'apparent self-serving bias' can be accounted by various nonmotivational, information processing variables. According to these authors, people tend (a) to expect positive outcomes and to externalize unexpected outcomes (positive or negative), (b) to perceive a closer covariation between behavior and outcomes under conditions of increasing success than under constant failure and (c) to misconstrue the meaning of contingency and inappropriately use the frequency of success to assess the relationship between behavior and performance. Also, Sicoly and Ross (1977) have suggested another mechanism wherein people will take more responsibility for an outcome they intended to produce than an outcome they sought to avoid.

The first explanation concerning unexpected outcomes has received extensive experimental attention. Unexpected outcomes - whether it be above or below expectations - are attributed to external factors more often than expected outcomes (e.g., Feather, 1969; Feather & Simon, 1971a, 1971b; McMahan, 1973; Simon & Feather, 1973). People who have low expectations may have a lowered pretask assessment of capabilities to achieve. Thus in posttask attributions, these subjects can not attribute success to their capabilities nor attribute failure to factors other than their lack of capabilities. Also several studies have demonstrated that expectancies affect the stability of attributions (Valle & Frieze, 1976; Weiner, Nierenberg, & Goldstein, 1976). Presumably an expected cause reflects the influence of stable causes, while unexpected causes are due to unstable causes (e.g., McMahan, 1973).

The other purported mechanism to account for the 'self-serving bias' is motivational. By this argument, the self-serving bias is a perceptual distortion based upon an 'ego-oriented' process. Presumably people are motivated to maintain their self-esteem. The attributional discrepancy between outcome conditions may be due to self-esteem enhancement after success and/or self-esteem protection after failure.

Earlier reviewers found little support for the motivational explanation (Miller & Ross, 1975), however more recent reviewers found strong evidence for a self-serving bias

when alternative nonmotivational explanations had been eliminated by experimental design (Bradley, 1978; Zuckerman, 1979). In this section, some of the research concerning attributional patterns in undergraduate subjects in impersonal achievement settings will be reviewed. The results of studies involving interpersonal influence and interdependent achievement behavior have been more equivocal (Miller & Ross, 1975; Bradley, 1978; Zuckerman, 1979).

Miller (1976) eliminated any aspect of the performance that could explain the self-serving phenomenon in terms of information processing. After subjects completed a bogus social perceptiveness test, outcome level and ego involvement (i.e., the importance of the task) were manipulated. The results indicated that success was attributed to internal factors and failure to external factors. This discrepancy was greater under high than low ego involvement. Information processing hypotheses can not explain the effect of the involvement manipulation, especially since it occurred after the task was completed. This experiment is the first direct manipulation of self-esteem involvement, the central concept of the self-serving bias hypothesis. Finally, as expected, subjects attributed success to more stable factors than failure. The ego involvement manipulation increased the instability of failure attributions but there was no change in the success condition.

Stevens and Jones (1976) had male subjects receive bogus feedback on four tasks in order to manipulate (a) the distinctiveness of the outcome on the fourth task compared to the outcomes on the dissimilar second and third tasks (b) the consistency of outcome on the fourth task and the similar first task and (c) the predominant performance of others (i.e., consensus). The researchers were interested in whether the subjects' success or failure on the fourth task would distort the logical usage of Kelley's (1967) information sources. As expected subjects who succeeded on the last task attributed cause to more internal and stable factors than subjects who failed. In contrast the three information variables had limited significant effects and even then the significant results were opposite the informational hypotheses. The implication is that the subjects attributed in a defensive manner that is consistent with the self-serving hypothesis.

Sicoly and Ross (1977) presented female subjects with a success or failure experience on a social sensitivity task in the presence of an observer-confederate. As predicted the subjects were more willing to take responsibility for success than failure. The subjects' ratings on four structured attribution factors were collected but the locus result was not discussed, since it was redundant with the responsibility measure. The confederate surreptitiously assigned either more or less responsibility than the subjects had previously recorded in "private". When the con-

federate assigned increased responsibility for success or decreased responsibility for failure, the subjects rated the confederate's judgment as more accurate than when the confederates's judgment was less complimentary. Thus the subjects were more receptive of feedback that enhanced their self-esteem in the success condition or protected their self-esteem in the failure condition. Since the basic statistical contrasts were made within success or within failure conditions, the results are not interpretable within an information processing framework.

Hoffman (1975) either failed or succeeded subjects on a 'person perception' task. The subjects were then 'induced' into either a depressed mood or elated mood, or received no mood manipulation. The type of mood induction was not noted in the abstract, but presumably the subjects read self-referent statements. Subjects were then asked to attribute causality for the previous task outcome. The induced depressed mood subjects credited dispositional factors for success and assigned situational factors for failure. Neither the elated nor control subjects made attributions which were a function of outcome. Thus a temporary depressed mood induced after task completion motivated normal subjects to make more self-serving causal attributions. It would appear that these subjects acted 'defensively' in a manner that might subsequently alleviate their induced depressed state.

McCarrey, Edwards and Rozario (1982) investigated the assumption that if feelings of self-worth can be maintained from information other than the outcome on the present task, then attributional bias will be reduced. In the morning, participants were administered a test of 'social perceptiveness' (two TAT cards). In an 'unrelated' study in the afternoon, subjects received low or high scores on 10 anagrams. Upon completion, the first examiner returned and randomly distributed on an individual basis ego-enhancing positive, ego-diminishing negative or no feedback concerning their 'social perceptiveness'. When the subjects attributed causality for their anagram performance, then the predictions were confirmed. The ego-diminished group was more internal after success and more external after failure than the ego-enhanced group. Unfortunately, statistical comparisons between these groups and the control group were not reported in the article. Nonetheless, compared to the control group, the ego-enhanced group was minimally less self-serving while the ego-diminished group was much more self-serving.

In summary, subjects who have performed an impersonal achievement task tend to attribute success more internally and stably than failure. The interpretation of the research to date provides strong evidence for a motivational processing explanation, however an informational explanation is certainly not ruled out. Indeed the two processes are not mutually exclusive. The present research assessed expecta-

tions and involvement prior to an in vivo task in order to assess if they differentiated levels of depression.

A word of caution is appropriate. The measurement of causal attributions is essentially a two-step process: (a) a perceptual distortion of private attributions (either due to information-processing and/or self-esteem explanations) and (b) the public-reporting of attributions involving possible self-presentational concerns. In the second step, individuals may deliberately misrepresent their private attributions in order to protect or enhance their public image. Thus the demonstration of the 'self-serving bias' in an experiment may reflect a perceptual distortion of private attributions or impression management or both (Bradley, 1978). Several studies appear to demonstrate that although self-presentational concerns play a role, the self-serving bias is indeed present at the private attributional level (e.g., Reis et. al., 1981; Arkin, Appelman & Berger, 1980).

Sex Differences

The gender of the participants has been found to affect the causal analysis of performance on impersonal and competitive tasks. Males have made more internal attributions after success and more external attributions after failure than females subjects (Feather & Simon, 1973; Levine et al., 1976; Nichols, 1975; Stephan et al., 1976). Three studies did not produce this interaction (Feather, 1969; McMahan, 1972; Simon & Feather, 1973). In the latter study, just the

opposite occurred as males made more internal attributions after failure than did females. In regards to the stability dimension, males compared to females made more unstable attributions after failure and/or more stable attributions after success (Simon & Feather, 1973; Levine et al., 1976; Nichols, 1975; Stephan et al., 1976). Feather (1969) and McMahon (1973) found no significant interaction between sex of the subject and outcome upon the stability dimension, while Feather and Simon (1973) found an unpredicted interaction. Specifically, in the failure condition, males attributed to more stable factors than females.

In three of the above studies, outcome was contingent of the subjects' performance rather than manipulated by the experimenter (Feather, 1969; Feather & Simon, 1973; Simon & Feather, 1973). The inconsistent results between these three studies and the remaining research (excepting McMahon, 1973) may be due to unknown variable(s) that could affect both performance and attributions. As subsequent discussion will make clear, it is also noteworthy that the lack of sex differences in attributions in the study by McMahon was paralleled by a lack of sex differences in pretesting expectancies.

Earlier in this appendix, cognitive and motivational factors were offered as alternative explanations to account for the self-serving bias. Presumably sex differences in attributions may be associated with either or both of these

factors. These alternative explanations will be discussed in turn. As mentioned previously, experimenters have demonstrated that participants with lower expectations for success are less self-serving than subjects with higher expectations (e.g., Feather, 1969). Provided the sexes differ in expectations, then presumably they will also differ in causal attributions. Indeed the research supports this notion. Except for McMahon (1973), all previously discussed studies that measured expectancies found that females had lower expectancies for success than males (Feather, 1969; Feather & Simon, 1973; Stephan et al., 1973). In a summary of diverse research, Maccobby and Jacklin (1974) found that males had higher expectancies than females on almost any task. Also, these authors noted that since the sexes often perform at a similar level, then presumably past performance histories can not account for the differences in expectancies.

Broverman, Vogel, Broverman, Clark and Rosenkrantz (1973) have found the sexes differ on two clusters of personality traits: competence (e.g., independent, competitive, objective, dominant, active, logical, ambitious, and self-confident) and interpersonal relations (e.g., warmth and expressiveness). Maccobby and Jacklin (1974) noted that a series of studies by Carlson and his colleagues have differentiated the sexes by two trait clusters: personal (e.g., ambitious, energetic, fair-minded, optimistic and practical) and social (e.g., attractive, cooperative, frank, leader and sympathetic). If males tend to associate them-

selves with competence and personal clusters and express less interest in interpersonal relations and social clusters while females do the opposite, then perhaps it is not surprising that males have higher expectancies in achievement settings.

Personal involvement in the task is a motivational factor that may affect attributions. Several studies have demonstrated that when the task is perceived as more important, then defensive attributions are more apparent (e.g., Miller, 1976; Nichols, 1975). Presumably when the task is perceived to reflect characteristics that are important to one's self-image, then self-enhancing or self-protective attributions would be more prominent. The studies cited for sexual differences in attributions generally used tasks associated with masculine stereotyped characteristics, i.e. competition, intelligence, and mathematical ability (Broverman et. al., 1973). Therefore it should not be surprising that the sexes differed in attributions when masculine oriented tasks were used.

Several studies manipulated the sex linkage of the task and assessed differences between the sexes (Deaux & Farris, 1977; Rosenfield & Stephan, 1978). In the first study, undergraduates were informed prior to the anagram task that either males or females performed better. Subjects were asked to rate their ability, the effort they expended, the difficulty of the task and the degree of luck. It should be noted that subjects were not asked to attribute causality

for outcome, but rather to ascribe qualities to themselves (see Deaux, 1976, p 348 for discussion). The results of their second experiment showed that the sexes differed in self descriptive characteristics in relationship to the sex linkage of the task. On the masculine task, males had higher expectations, higher evaluations of their performance, and higher ascription of ability than females. On the feminine task, expectancies, evaluations and ascription of ability tended to be equal, but not reversed in favour of the females.

The second study presented undergraduates with a task described as either 'masculine' or 'feminine' design coordination (Rosenfield and Stephan, 1978). As a check on the manipulation of the sex linkage of the task, subjects were questioned concerning their expectancy of successs and ego involvement. As expected females had lower expectancies for success and lower ego-involvement on the masculine task than on the feminine task. In contrast, males had the reverse pattern. The only other significant pretesting effect was that males had higher expectancies than females on both tasks. The four structured causal attrubutions were converted by the authors into a locus of causality index. As expected on the feminine task, females attributed success more internally and failure more externally than males. On the masculine task females attributed success less internally and failure less externally than males. Thus each sex

demonstrated a greater self-serving bias on their respective sex linked task.

Rosenfield and Stephan (1978) hypothesized that sex differences in attributions were due to differences in ego-involvement and expectancies. To test this hypothesis, an analysis of covariance using expectancies and ego-involvement as covariates reduced the triple interaction between sex of the subject, outcome, and sex linkage to nonsignificance. Thus when the sexes were statistically equalized on expectancy and ego-involvement, then the sex differences in locus of causality did not appear. Further analyses revealed that 48% of the variance of the locus of causality index was accounted for by the covariates. Ego-involvement accounted for more variance (38%) than expectancy (6%) or their interaction (4%).

In conclusion, gender differences in the attribution of causality appear to occur to the extent that the sexes differ in pretesting expectations and involvement in the particular task. The task used in the present research (Social Empathy Test) is oriented to the interpersonal/social cluster of traits associated with feminine stereotyped characteristics (Broverman et. al., 1973; Maccoby & Jacklin, 1974). If the results show that females were more self-serving than males in the causal attributions, then it was expected that the sexes would differ in pretesting perceptions of the task (i.e., expectations, involvement and sex-linkage).

Depressive Attributional Style

Several lines of experimental evidence indicate that depressives attribute causality differently than people who are not depressed. The review of this literature will be divided into how the presenting event was experienced by the participants: (a) in vivo laboratory tasks, (b) hypothetical events and (c) real life events.

An important consideration in these studies is the manner in which depression was assessed. Clinical samples have been selected on the basis of diagnosis (Raps et. al., 1982), depression inventories (Gong-Guy & Hammen, 1980), or both procedures (Miller et. al., 1982 and apparently Romanoff, 1976). Using both procedures produces a more reliable assessment of clinical depression. All studies using undergraduates have employed self-report scales to classify level of depression (see Appendix I).

In Vivo Laboratory Tasks. Apparently there are only two studies that assessed attributions in a clinical population. According to the published abstract of one study, Romanoff (1976) classified 48 male inpatients as depressed-psychiatric, nondepressed-psychiatric and nondepressed-nonpsychiatric on the basis of the Beck Depression Inventory, a Behavior Checklist for Depressive Symptomatology, and the 'reason for hospitalization'. In a within group design, two 'perceptual judment' tasks were presented and the inpatients succeeded at one task and failed at the other. In

response to structured questionning, all groups attributed their failure to a combination of internal and external factors. All groups attributed success to their abilities and efforts, however the depressed psychiatric group attributed their success significantly more to luck (i.e., external and unstable) than the other groups. The inpatients reported trial by trial expectations for success and gave themselves reinforcement. It is possible that these experimentally required behaviors interfered with the hypothesized attributional style.

In the second clinical study, Miller, Klee and Norman (1982) compared inpatients with a diagnosis of primary or secondary depression (with BDI score above 17) to a control group (with BDI scores below 12; schizophrenics were excluded). In sequential order, the patients self-generated the main cause for: (a) an abbreviated A.S.Q., (b) their most stressful recently experienced life event, and (c) either contingent success or noncontingent failure on a noise-escape task. When the patients dimensionalized their self-generated attributions, then only the attributional composite (i.e., the sum of the 3 dimensions) for the life event was significantly discrepant in the predicted direction. When trained raters dimensionalized the diagnostic groups' attributions, the only significant difference appeared on the in vivo task. Specifically, compared to the controls, depressed patients were less self-serving on the attribu-

tional composite after failure and they were more self-serving after success. Unfortunately, the published article did not breakdown the results for the attributional composite into the three causal dimensions. To conclude, there was no evidence of a depressive attributional style in the in vivo task when patients dimensionalized and mixed evidence when judges dimensionalized. The effect of perspective (i.e., judges vs. subjects) upon dimensionalization was not directly analyzed in this study.

Seven studies have investigated depressive attributional style by having undergraduates make attributions for their success or failure on impersonal in vivo tasks. Except for Klein et al. (1976) and Litman-Adizes (Note 1), all studies used structured questions of four attributional factors: ability, effort, task difficulty, and luck. The generality dimension was not assessed in these seven studies.

Klein et al. (1976) presented soluble, control, or insoluble stimulus discrimination problems and tested for performance deficits on anagrams. Subjects scoring 8 or less on the Beck Depression Inventory were assigned to the nondepressed group and the remaining subjects were assigned to the depressed group. In a postexperimental questionnaire subjects were asked, "To what extent do you think your success or failure was due to your own abilities (or lack of them)?" and "To what extent do you think your success or failure was due to the level of difficulty of the problems

chosen by the experimenter?". An 'internality' measure was constructed from the difference score between these two measures. Depressed subjects compared to the nondepressed subjects had a greater 'internality' score for the unsolvable problems and a smaller 'internality' score for the solvable problems. No break down for sex of the subjects was reported.

Tennen (1976) exposed female undergraduates to either success or failure on a series of anagrams. Depressed subjects attributed failure more to lack of effort, i.e. internal and unstable, and attributed success to luck (i.e., external and unstable) than nondepressed subjects. No further details are available in the published abstract.

Murdoch-Kitt (1976) manipulated level of depression, sex of the subjects, task characteristics, and outcome. Subjects were selected on the basis of their Beck Depression Inventory scores. The depressed group scored 9 or more and the nondepressed group scored below 5. The subjects paired slides of facial expression with emotional words. The task was described as based on skill or luck and the subjects received either high or low feedback. Prior to each of three trials, subjects stated their expectancies and goal levels. Prior to the first feedback and after the second and third feedback subjects indicated how much their score was caused by skill, effort, luck or task ambiguity. The effect of the four independent variables was not noted in the published abstract. In what appears to be posthoc analyses, the au-

thor reported an interaction between outcome, task characteristics and the Beck Hopelessness Scale. Nonhopeless subjects attributed success to internal and failure to external factors. Hopeless subjects attributed skill outcomes to stable factors and chance outcomes to unstable outcomes.

Rizley (1978, Experiment 1) manipulated level of depression and outcome on an impersonal number-guessing game. The subjects were selected on the basis of extreme scores on the Beck Depression Inventory. The depressed group, compared to the nondeprerssed group, rated effort as more important for failure and rated ability as less important for success. There were no other significant interactions or main effects on the four attribution factors. Although a statistical analysis of the locus of causality and stability dimensions was not reported, it would appear that depressives externalized success and were mediate on locus after failure. In contrast, nondepressives were mediate after success and externalized failure. Thus relative to the nondepressed group, the depressed group internalized failure and externalized success. On the stability dimension, the depressed group scored high on instability after both success and failure. The nondepressed subjects rated both outcomes as unstable, though to a lesser extent than depressives. It should be noted that 'luck' was the highest rated factor for both groups in both outcome conditions. All sub-

jects perceived their performance as determined primarily by an external and unstable cause. By implication the number-guessing game appeared to have limited implications concerning the subjects' self-perceptions.

Kuiper (1978) presented female undergraduates with failure, neutral, or success outcomes on a word association task. Subjects were selected for depression based upon their extreme scores on the Costello-Comrey Depression Scale (Costello & Comrey, 1967). This self-report scale contains only mood oriented questions. In support of the self-serving bias hypothesis, nondepressives externalized failure and internalized success. Depressed subjects internalized failure and as predicted the groups were significantly different in this condition. However, contrary to predictions, the depressed subjects internalized the causes for all outcomes. The level of reinforcement did not affect their locus of causality. The internal attributions for failure would be consistent with the depressive's self-blaming tendencies, but the results suggest that depressives feel responsible for all outcomes. However the groups were not significantly different on locus of causality in the neutral and success conditions. Finally there were no significant group or outcome differences on the stability dimension.

Kuiper (Note 9) has reported the results of the Depression Adjective Checklist that were not in the published 1978 study. Some of the experimental procedures that were not

apparent in the published study may have a bearing on the attributional results. First, subjects were asked to rate their confidence that their response was correct after each of the 100 trials. Second, prior to each of five blocks of 20 stimulus words, subjects were asked how many of the next 20 words they expected to get correct. As a post hoc explanation of the null stability results, the present author suggests that the confidence and expectancy ratings might have enhanced the consistency of each outcome condition. It is possible that this informational variable (i.e., high consistency) eliminated the hypothesized stability discrepancies between the depressed and nondepressed groups.

Litman-Adizes (Note 1) selected undergraduates who were extreme scorers on the Beck Depression Inventory. Sex of the subjects was not reported. Subjects were administered either soluble or insoluble conceptual discrimination problems and attributions were assessed by structured questioning concerning six causes: task difficulty, ability, momentary luck, unstable effort, mood, and fatique. An interaction between depression and outcome occurred only for task difficulty and ability. The depressed group compared to the nondepressed group rated ability as more important and tended to rate task difficulty as less important for failure. There were no significant differences on these two factors after success. Ability and task difficulty are commonly perceived as stable and uncontrollable; they differ only in locus of causality. Thus after failure, depressives

appeared to emphasize internal and demphasize external causes, compared to nondepressives. Also, subjects were asked to rate the attribution of outcome along the dimensions of locus, stability, and controllable. The results demonstrated only one effect involving depression. Depressed subjects experienced less control than nondepressed subjects under either success or failure.

It is difficult to summarize the clinical research to date due to the limited description in the published results. Nonetheless, it is safe to conclude that there is some evidence for a depressive attributional style after failure and some evidence that depressives are less and even more self-serving than psychiatric controls after success. In regards to a nonpsychiatric population, there is strong evidence that depressed undergraduates attribute failure more internally than nondepressed undergraduates and mixed evidence as to whether depressives attribute externally to a greater extent than nondepressed students. Some studies found that depression in undergraduates did not affect the stability of attributions, while other found that depressives reported less stable attributions not only for success, but also for failure. The generality dimension has not been investigated to date.

Hypothetical Events. The second investigative procedure has presented subjects with 12 hypothetical interpersonal and achievement situations (A.S.Q., the Attributtional Style Questionnaire; Peterson et. al., in press). Half of

the situations result in 'bad' outcomes (i.e., negative valence) and the remainder result in 'good' outcomes (positive valence). For each situation, the subjects recorded the major cause of the described event and dimensionalize that cause. It is important to note that the stability dimension on the A.S.Q. has been operationally defined as the consistency of influence in future reoccurrences of the same event. The A.S.Q. is a simple procedure to administer and attempts to assess the cross-task/situation implications associated with the concept of attributional style.

Unpublished research provided evidence for the validity of the A.S.Q. (Peterson et. al, in press; as mentioned by Raps et. al, 1982). The A.S.Q. was found to predict: (a) attributions made by individuals about actual events in their lives, (b) reports of depressive symptoms following failure on a mid-term examination, and (c) generality of helplessness deficits produced in laboratory experiments.

Two studies have administered the A.S.Q. to clinical samples. In one study, Raps et. al. (1982) found that depressed unipolar male patients attributed bad outcomes to more internal and stable, but not global, causes than male nondepressed schizophrenics and medical patients. After good outcomes, the depressives did not attribute differentially than the schizophrenics, although the former were more self-serving than the medical inpatients on locus and stability. The other clinical study has been previously mentioned in this appendix (Miller et. al., 1982). In this

study, inpatients did not differ from psychiatric controls on the attributional composite when either the patients or judges dimensionalized. Since the researchers used an abbreviated A.S.Q. (only 6 of the 12 events were presented), it is possible that potential group differences were masked by increased error variance which usually occurs when a form is shortened.

Six studies have assessed the relationship between undergraduates' attributional style for hypothetical events with their level of self-reported depressive sypmptoms (Seligman et. al., 1979; Blaney et. al., 1980; Peterson et. al., 1981; Sweeney et. al., 1982; Golin et. al., 1981; Metalsky et. al., 1982). For example, in the earliest study, Seligman et. al. (1979) demonstrated that higher BDI scores were associated with more internal ($r = .43$), stable ($r = .34$) and global ($r = .35$) attributions for bad outcomes; and less internal ($r = -.22$), stable ($r = -.28$), but not global ($r = -.04$) attributions for good outcomes. Also, Sweeney et. al. (1982) found that depressed students were only self-defeating when they attributed an event to themselves, but not when they attributed the same event to others. In contrast to these studies, other researchers have reported a weak depressive attributional style on the A.S.Q. For example, the correlation between BDI scores and the attributional composite has been low for bad outcomes (about 6% of the variance) and even lower for good outcomes (around 1.5% of the variance) (Blaney et. al., 1980; Golin et. al., 1981).

Peterson et. al. (1981) modified the A.S.Q., and produced more satisfactory results. They distinguished between two types of internal attributions: (a) behavioral ('what one does') and characterological ('what one is'). They reasoned that characterological blame produces helplessness and depression and behavioral blame does not. Moderaate to strong correlations emerged between the BDI and the mean number of attributions for bad outcomes: behavioral ($r = -.44$), characterological ($r = .72$) and external ($r = -.43$). For good events, only the number of external attributions was associated with BDI scores ($r = .35$). Thus the dichotomization of internality improved the measurement of 'depressive attributional style'.

Two studies have explored an important theoretical concern, the ability to anticipate future depression based upon current attributional style. In a cross-lagged panel correlational analysis, Golin et. al. (1981) found support for the hypothesis that stability and globality for bad outcomes was related to level of depressive symptoms one month later. When the initial depression was partialed out, the attributional composite at Time 1 accounted for only 8% of the variance in depression at Time 2. The second study by Peterson et. al. (1981) found that the attributional measures, particularly characterological self-blame for bad events, were associated with BDI scores 6 and 12 weeks later. Nonetheless, these correlations became nonsignificant when initial BDI scores were partialed out.

The main limitation of the previous 2 studies was that the researchers did not assess the interactive influence of attributional style and environmental events in producing/ predicting subsequent depression. According to Abramson et. al. (1978b) people who have a predisposing 'depressive' attributional style when in a normal mood state should not develop depression unless they experience a significant negative outcome. To this end, three studies have explored this person X situation interaction (Metalsky et. al., 1982; O'Hara, Rehm & Campbell, 1982; Manly, McMahon, Bradley & Davidson, 1982). These studies will be considered in turn.

In a prospective study, Metalsky et. al. (1982) examined the ability of depressive attributional style to predict the affective reaction to receiving a high or low grade on a midterm exam. Students with more internal or global attributions for negative outcomes on the A.S.Q. had more severe depressive mood reactions to the negative event (low grade). In contrast, attributional style for negative events was not associated with changes in mood for the positive event (high grade). The results support the notion of a diathesis-stress model in which attributional style interacts with negative life events to produce a depressive reaction.

Two studies employed the circumstances around childbirth as a stressful life event (O'Hara et. al., 1982; Manly et. al., 1982). The former researchers found that attributional style in the second trimester (with prepartum BDI

scores partialed out) accounted for a significant (2% of the variance) amount of depression 3 months postpartum. The later researchers found no association between attributional style during the third trimester and level of depression either concurrently or three days postpartum. In view of the purported role of hormonal levels, it is perhaps not unexpected that attributional style is minimally associated with postpartum depression. The person x situational implications of the reformulated model would be more appropriately tested in more environmental events (e.g., admittance/refusal to graduate school).

In summary, research using hypothetical events has supported a depressive attributional style - especially for negative outcomes - however the correlations with concurrent depression were often low. Further dimensional reconceptualization and psychometric development of the A.S.Q. may improve upon this situation. Additional research is needed to assess the circumstances under which attributional style on the A.S.Q. predicts subsequent depressive reactions.

Real Live Events. The third approach to assessing depressive attributional style has involved the dimensionalization of recently experienced stressful life events. This research has often investigated various cognitive perceptions but only the three causal dimensions will be reviewed. It is important to note that stability has been operationally defined as temporal consistency with no situational im-

plications. Two clinical and seven undergraduate studies will be reviewed.

In a clinical outpatient study, Gong-Guy and Hammen (1980) divided clients into depressed and nondepressed groups based upon their BDI scores. When the patients dimensionalized their five most upsetting recent life events, no group differences emerged. Nonetheless, when only the most upsetting event was analyzed, the depressed clients made more internal and marginally more global ($p = .06$) responses than the control group. The stability dimension was not significantly different ($p = .10$). These researchers reported good agreement between the participants' responses on the attributional questionnaire and independent judges' ratings of attributions in unstructured clinical interviews. In the other clinical study previously mentioned in this appendix, Miller et. al. (1982) found that compared to the control inpatients, depressives were less self-serving on the attributional composite of their most stressful recent life event. Curiously, when trained evaluators dimensionalized the same event, the groups did not differ.

Several researchers have investigated the attribution of real life events by undergraduates (Hammen & Cochran, 1981; Hammen, Krantz & Cochran, 1981; Harvey, 1981). Hammen and Cochran had the students dimensionalize their five most stressful recent life events. Depressed students did not differ in the MANOVA from nondepressed students who had experienced a lot of stress and a nondepressed control group.

However, when broken down into univariate analyses, the depressed group rated the five events as more global than the nondepressed controls. Also both the depressed and nondepressed-high stress groups rated their most stressful event as more stable than the nondepressed controls.

In the second study, Hammen et. al. (1981) administered the BDI and an attributional questionnaire of the students' five most stressful events on two occasions separated by an 7-8 week interval. Factors which were the best predictors of subsequent depression were globality (B = .18), controllability (B = -.15) and externality (B = .13). Stability and predicted recurrence of the event added little predictive power and the multiple regression accounted for only 5% of the variance of the subsequent depression. If initial BDI scores had been entered first into the regression analysis, then the predictive utility of the causal attributions would have been minimal. Several significant dimensional cluster patterns emerged: (a) perceived low control, globality, predicted recurrence of the event and externality ('helpless depression'), and (b) high control, internal, unstable and global attributions with predicted recurrence ('self-blaming depression'). These clusters of depression were associated with the intensity of depression at Time One, its chronicity (Time Two) and generality (as measured by the students' satisfaction with eight areas of their lives). The authors concluded that there may be more than one depressive attributional pattern and contrary to Abramson et. al. (1978b) an

internal, stable and global pattern did not emerge as predictive of depression.

In the third study, Harvey (1981) had female undergraduates dimensionalize two recent life ('undesignated') events and four predetermined ('designated') events. The events were half positive and half negative in valence. Unfortunately the generality dimension was dropped due to its low interjudge reliability. When raters dimensionalized the students' writen explanation of the six events, the depressed group made more internal attributions for negative events and more external attributions for positive events than the nondepressed subjects. Subjects rated four structured causal factors for the two 'undesignated' events, but only the 'ability' factor reached significance. Compared to the nondepressed group, the depressed group attributed causality more to ability after a negative event and less to ability after a positive event. When the published scores for the four factors are summed into dimensional scores, then it appears that locus and not stability was involved in the group differences.

One possible explanation of the inconsistency amongst these clinical and student experiments is the heterogeneity of the stressful events experienced by the participants. The variety of informational characteristics contained in the various events may mask the emergence of a depressive attributional style. Several studies have examined the par-

ticipants reaction to the same/similar event (Barthe & Hammen, 1981; Hammen & deMayo, 1982).

Barthe & Hammen (1981) had students ascribe their performance on an actual course examination to four structured factors. Compared to controls, depressed students attributed failure more and success less to their ability, however they ascribed their performance more to luck and less to effort after both failure and success outcomes. When the causal factors were converted to locus and stability scores, then the groups did not differ along the dimensions. In this study the mood scale was administered after the subjects had received their grades. Thus both the measures of depression and attributional style may reflect a temporarily induced reaction to the examination results. In quasi-experimental designs, at least one of these variables should be assessed prior to the stressful event.

Hammen and deMayo (1982) assessed attributional style in urban high school teachers who share common stressful working circumstances. The participants dimensionalized the causes of the stresses associated with teaching. The results showed that neither locus or stability was associated with scores on a self-reported mood scale or a stress inventory.

A recent sophisticated approach has been to study the characteristics of stressful life events themselves. Hammen and Mayol (1982) suggested that "the appraisal of events

rather than their mere occurrence shapes the nature and intensity of dysfunctional reactions". These researchers categorized life events: desirable-responsible (Type A), undesirable-responsible (Type B), undesirable-not responsible (Type C), and ambiguous (Type D). The results showed that self-reported depression in undergraduates (with total number of events partialed out) was associated with Type A ($r = -.14$), Type B ($r = .18$) and Type D ($r = -.15$), but not Type C ($r = -.03$) events. Thus recently experienced negative and uncontrollable events were more associated with depression level. The participants attributed the most upsetting Type B events as more internal and global than the most upsetting Type C events. This preliminary research suggests that the characteristics of the events themselves must be taken into consideration in a person X situation interaction to account for the onset of depression.

In summary, research using real life events has provided minimal support (except, perhaps, for locus) for a depressive attributional style in either clinical or normal samples. The recent study by Hammen and Mayol (1982) suggests the need for a more interactive account of the type of stressful events and individual cognitive style.

Appendix C

The Beck Depression Inventory

On this questionnaire are groups of statements. For each group pick out the one statement which best describes the way you feel today, that is, right now.

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

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

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

0 I get as much satisfaction out of things as I used to.
1 I don't enjoy things the way I used to.
2 I don't get satisfaction out of anything any more.
3 I am dissatisfied or bored with everything.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

0 I haven't lost much weight, if any, lately.
1 I have lost more than 5 pounds.
2 I have lost more than 10 pounds.
3 I have lost more than 15 pounds.

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

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

Appendix D

Shipley Institute of Living Scale

In the test below, the first word in each line is printed in capital letters. Opposite it are four other words. Draw a line under the one word which means the same thing, or most nearly the same thing, as the first word. A sample has been worked out for you. If you don't know, guess. Be sure to underline the one word in each line that means the same thing as the first word.

sample

	Large	red	big	silent	wet

begin here

(1)	TALK	draw	eat	speak	sleep
(2)	PERMIT	allow	sew	cut	drive
(3)	PARDON	forgive	pound	divide	tell
(4)	COUCH	pin	eraser	sofa	glass
(5)	REMEMBER	swim	recall	number	defy
(6)	TUMBLE	drink	dress	fall	think
(7)	HIDEOUS	silvery	tilted	young	dreadful
(8)	CORDIAL	swift	muddy	leafy	hearty
(9)	EVIDENT	green	obvious	sceptical	afraid
(10)	IMPOSTER	conductor	officer	book	pretender
(11)	MERIT	deserve	distrust	fight	separate
(12)	FASCINATE	welcome	fix	stir	enchant
(13)	INDICATE	defy	excite	signify	bicker
(14)	IGNORANT	red	sharp	uninformed	precise
(15)	FORTIFY	submerge	strengthen	vent	deaden
(16)	RENOWN	length	head	fame	loyalby
(17)	NARRATE	yield	buy	associate	tell
(18)	MASSIVE	bright	large	speedy	low
(19)	HILARITY	laughter	speed	grace	malice
(20)	SMIRCHED	stolen	pointed	remade	soiled
(21)	SQUANDER	tease	belittle	cut	waste
(22)	CAPTION	drum	ballast	heading	ape
(23)	FACILITATE	help	turn	strip	bewilder
(24)	JOCOSE	humorous	paltry	fervid	plain
(25)	APPRISE	reduce	strew	inform	delight
(26)	RUE	eat	lament	dominant	cure
(27)	DENIZEN	senator	inhabitant	fish	atom
(28)	DIVEST	dispossess	intrude	rally	pledge
(29)	AMULET	charm	orphan	dingo	pond

(30)	INEXORABLE	untidy	involatile	rigid	sparse
(31)	SERRATED	dried	notched	armed	blunt
(32)	LISSOM	moldy	loose	supple	convex
(33)	MOLLIFY	mitigate	direct	pertain	abuse
(34)	PLAGIARIZE	appropriate	intend	revoke	maintain
(35)	ORIFICE	brush	hole	building	lute
(36)	QUERULOUS	maniacal	curious	devout	complaining
(37)	PARIAH	outcast	priest	lentil	locker
(38)	ABET	waken	ensue	incite	placate
(39)	TEMERITY	rashness	timidity	desire	kindness
(40)	PRISTINE	vain	sound	first	level

Complete the following. Each dash (__) calls for either a number or a letter to be filled in. Every line is a separate item. Take the items in order, but don't spend too much time on any one.

start here

(1) 1 2 3 4 5 __

(2) white black short long down __ __

(3) AB BC CD D__

(4) Z Y X W V U __

(5) 12321 23432 34543 456__ __

(6) NE/SW SE/NW E/W N/__

(7) escape scape cape __ __ __

(8) oh ho rat tar mood __ __ __ __

(9) A Z B Y C X D __

(10) tot tot bard drab 537 __ __ __

(11) mist is wasp as pint in tone __ __ __

(12) 57326 73265 32657 26573 __ __ __ __ __

(13) knit in spud up both to stay __ __

(14) Scotland landscape scapegoat __ __ __ __ ee

(15) surgeon 1234567 snore 17635 rogue __ __ __ __ __

(16) tam tan rib rid rat raw hip __ __ __

(17) tar pitch throw saloon bar rod free tip end plank __ __ __ __ __ meals

(18) 3124 82 73 154 46 13__

(19) lag leg pen pin big bog rob __ __ __

(20) two w four r one on three __

Appendix E

Social Empathy Test

Word Associations

A.	AFRAID	SCARED	FEAR	DARK	BRAVE
B.	GUNS	SHOOT	WAR	BULLETS	FIRE
1.	PEOPLE	PERSON	CROWD	PLACES	ANIMALS
2.	CHILDREN	PLAY	SMALL	KIDS	CHILD
3.	WOMAN	BOY	MAN	DRESS	GIRL
4.	ANGER	FEAR	MAD	HATE	RED
5.	RELIGION	BIBLE	CHURCH	GOD	CATHOLIC
6.	DARK	ROOM	NIGHT	LIGHT	BLACK
7.	RED	COLOR	WHITE	BLUE	BLUE
8.	QUIET	LOUD	SLEEPING	NOISE	SOFT
9.	COMFORT	BED	SOFT	CHAIR	EASE
10.	WORKING	LOAFING	HARD	SLOW	MAN
11.	WHO	IS	WHAT	WHOM	ME
12.	HIGH	BUILDING	TALL	LOW	MOUNTAIN
13.	GO	FAST	STOP	AWAY	COME
14.	SOUR	LEMON	BETTER	SWEET	CREAM
15.	THIRSTY	DRINK	HUNGRY	WATER	DRY
16.	CRY	BABY	WEEP	LAUGH	TEARS
17.	PLAYING	WORK	CHILDREN	GAMES	FUN
18.	US	WE	THEM	YOU	THEY
19.	JOY	FUN	SAD	SORROW	HAPPY
20.	LIGHT	DARK	BRIGHT	LAMP	SUN
21.	HOUSE	DOOR	HOME	GARAGE	WHITE
22.	BEAUTIFUL	UGLY	GIRL	WOMAN	PRETTY
23.	COLD	HOT	WINTER	SNOW	WARM
24.	SICKNESS	ILL	HEALTH	BED	DEATH
25.	LIVE	HOUSE	LOVE	LIFE	DIE
26.	WISH	HOPE	WENT	DREAM	WELL
27.	WHY	NOT	QUESTION	BECAUSE	WHEN
28.	YOUNGER	CHILD	SISTER	BROTHER	OLDER
29.	TROUBLE	POLICE	FEAR	DANGER	BAD
30.	TELL	STORY	SPEAK	TOLD	ME
31.	THINNER	THIN	PAINT	SKINNY	FATTER
32.	BLACK	WHITE	NIGHT	RED	DARK
33.	BABY	CRY	MOTHER	BOY	CHILD
34.	CLOSER	NEARER	TO	COME	FARTHER
35.	SLEEP	BED	TIRED	AWAKE	REST
36.	WE	THEY	ARE	US	THEM
37.	DREAM	NIGHTMARE	SLEEP	WISH	NIGHT
38.	TAKE	GIVE	IT	TOOK	STEAL

39.	COME	CAME	HOME	GO	HERE
40.	DEEP	SLEEP	DARK	SHALLOW	WATER

Outcome Schedules

Low Outcome (20% Reinforcement)

0000100100001001000000100100001000100000

Medium Outcome (50% Reinforcement)

0101011001100110100100011011010010110011

High Outcome (80% Reinforcement)

1110111011111111001101110111111101101111

Note. There were 40 trials on the S.E.T. The feedback was a flashing 'WRONG' (0) or 'CORRECT' (1).

Dimensional Dipoles of Structured Factors

Factors	Locus	Stability	Generality
Your ability to associate words	I	S	Sp
Your ability to empathize with others	I	S	G
Your general intelligence	I	S	G
Effort which is typical for you	I	S	G
An unusual level of effort	I	V	Sp
The Empathy Test's degree of difficulty or easiness	E	S	Sp
Momentary good or bad luck	E	V	Sp
Your interest and motivation	I	V	G
Your emotional state & mood	I	V	G
Your present state of health	I	V	G
Your personality	I	S	G
The experimenter & his/her behavior	E	S	Sp
The room or noise outside the room	E	V	Sp
Conditions at home, work, school & with friends	E	V	G
Your thoughts not concerning the test	I	V	Sp
Your cultural background	E	S	G
Personal experiences	I	S	G

Note. The dipoles are internal (I), external (E), stable (S), variable (V), global (G) and specific (Sp).

Selected Video Displays

WHAT IS YOUR SEX: 1 = MALE

2 = FEMALE

YOUR ANSWER?

WHAT IS YOUR AGE IN YEARS?

YOUR ANSWER?

MARITAL STATUS:

1 = SINGLE

2 = COMMON-LAW

3 = MARRIED

4 = SEPARATED

5 = DIVORCED

6 = WIDOWED

YOUR ANSWER?

AFRAID:

(1) SCARED

(2) FEAR

(3) DARK

(4) BRAVE

YOUR ANSWER: 2

WRONG

1. HOW WELL DO YOU EXPECT TO DO?

1 2 3 4 5 6 7

NOT WELL — MEDIUM WELL — EXTREMELY WELL

YOUR ANSWER?

2. HOW MANY OF THE 40 QUESTIONS DO YOU EXPECT TO GET CORRECT?

YOUR ANSWER?

3. HOW IMPORTANT IS IT FOR YOU TO DO WELL ON THE TEST?

1 2 3 4 5 6 7

NOT IMPORTANT — MEDIUM IMPORTANT — EXTREMELY IMPORTANT

YOUR ANSWER?

4. HOW MUCH DO YOU VALUE SOCIAL EMPATHY?

1 2 3 4 5 6 7

NO VALUE — MEDIUM VALUE — EXTREMELY VALUE

YOUR ANSWER?

5. DOES THE EMPATHY TEST MEASURE CHARACTERISTICS THAT ARE TYPICAL OF FEMALES OR MALES?

1 2 3 4 5 6 7

TOTALLY FEMALE — EQUALLY SHARED — TOTALLY MALE

YOUR ANSWER?

PLEASE ANSWER THE FOLLOWING 4 QUESTIONS:

1. HOW WELL DID YOU DO ON THE TEST?

1 2 3 4 5 6 7

NOT WELL — MEDIUM WELL — EXTREMELY WELL

YOUR ANSWER?

2. HOW MANY OF YOUR ANSWERS WERE CORRECT?

YOUR ANSWER?

3. HOW MANY QUESTIONS WERE THERE IN THE TEST?

YOUR ANSWER?

4. TO WHAT EXTENT DID YOU FAIL OR SUCCEED?

1 2 3 4 5 6 7

FAILURE — SUCCESS

YOUR ANSWER?

IN THE NEXT SET OF QUESTIONS, YOU WILL BE ASKED TO WHAT EXTENT EACH INFLUENCE HINDERED OR HELPED YOUR SCORE.

YOU SELECT AN ANSWER BETWEEN 1 AND 9 FROM THE SCALE SHOWN BELOW.

ON A SCALE FROM 1 TO 9:

1	2	3	4	5	6	7	8	9
GREATLY				NO				GREATLY
HINDER				INFLUENCE				HELP

TO WHAT EXTENT DID

'------factor's name-------'

INFLUENCE YOUR SCORE ON THE TEST?

YOUR ANSWER?

LOCATION OF INFLUENCES:

EACH INFLUENCE ON THE 'SOCIAL EMPATHY TEST' IS LOCATED EITHER OUTSIDE YOURSELF AND IN THE ENVIRONMENT (EXTERNAL) OR INSIDE YOURSELF (INTERNAL).

1	2	3	4	5	6	7	8
EXTERNAL		SLIGHTLY EXTERNAL		SLIGHTLY INTERNAL		INTERNAL	

YOUR SCORE ON THE TEST WAS helped/hindered BY '------factor's name------'.
IS THIS INFLUENCE LOCATED INTERNALLY OR EXTERNALLY?

YOUR ANSWER?

LIKELIHOOD OF FUTURE INFLUENCE:

SUPPOSE YOU WERE TO TAKE THE 'SOCIAL EMPATHY TEST' AGAIN SOMETIME IN THE FUTURE. ANOTHER FORM OF THE TEST WITH NEW WORDS WOULD BE PRESENTED.

EACH REASON MAY OR MAY NOT BE LIKELY INFLUENTIAL AGAIN?

1	2	3	4	5	6	7	8
NOT LIKELY						EXTREMELY LIKELY	

HOW LIKELY WILL '------factor's name------' CONTINUE TO hinder/help YOUR SCORE UPON RETESTING?

YOUR ANSWER?

GENERALITY OF INFLUENCE:

EACH INFLUENCE MAY AFFECT FEW OR MANY OF YOUR DAILY ACTIVITIES?

1 2 3 4 5 6 7 8

NONE FEW MANY MOST

HOW MANY DAILY ACTIVITIES DOES

'------factor's name------'

hinder/help?

YOUR ANSWER?

TWO FINAL QUESTIONS.

TO WHAT EXTENT DOES YOUR SCORE ON THE 'SOCIAL EMPATHY TEST' ACCURATELY REFLECT YOUR ABILITY TO EMPATHIZE WITH OTHER'S THOUGHTS AND FEELINGS?

1	2	3	4	5	6	7
NOT AT ALL		POORLY		WELL		EXACTLY

YOUR ANSWER?

DO YOU BELIEVE THE STUDY INVOLVED DECEPTION?

PRESS 1 FOR NO

PRESS 2 FOR YES

YOUR ANSWER?

Appendix F

Forms

Face Sheet

Name: _____ Date: _____

NO. _____ Admitting Psychiatrist: _____

Sex: M F

Admitting Diagnosis(es): (list primary diagnosis first)*

1. _____

2. _____

3. _____

Participation in the Study: (study is run each Thurs. A.M.)
( ) recommended for immediate participation
( ) recommended in _____ days

vs. not recommended, since:

( ) patient will not be able to understand experimental procedure and/or respond appropriately to the questions.
( ) patient will probably not cooperate.
( ) experiment may be antitherapeutic.
( ) other reason; please specify _____

Additional Comments:

* If a specific diagnosis based on the International Classification of Diseases is not possible at this time, then list alternative diagnostic possibilities or provide a description of the presenting psychopathology.

Consent Form

I hereby volunteer to participate in a research study which will take about two hours over the next week.

I understand the study will assess my social empathy and the session will be tape recorded. Also I will complete questionnaires concerning my intellectual abilities and how I feel.

I understand I will be fully briefed on the study. Information obtained will be treated confidentially in a professional manner for research purposes and the design of new therapeutic interventions.

I understand that had I declined to participate, then the quality of medical care received at the Grace Hospital would not have been affected.

Date _____

Signature _____

Witness _____

Attributional Record Form

SUBJECT NO. ___ DATE _____

EXPERIMENTER ___ TIME _____

RECALLED:

NO.	-/0/+	ATTRIBUTION
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

POSTTASK:

OLD NO.	NO.	-/0/+	ATTRIBUTION
	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		

COMMENTS:

Postexperimental Evaluation Forms

1. a) How convinced are you that there was not a deception in this study? Circle the appropriate number.

1	2	3	4
not very sure	somewhat convinced		very convinced

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

2. a) To what extent did you enjoy participating in this study?

1	2	3	4	5	6	7
not at all	little		some	quite a bit		very much

b) Why?

3. a) How much scientific value do you think this study had?

1	2	3	4	5	6	7
not at all	little		some	quite a bit		very much

b) Why?

4. Had you heard anything about the study prior to participating in it? If yes, what had you heard?

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

   b) How convinced are you that there was a deception in this study? Circle the appropriate number.

1	2	3	4
not very sure	somewhat convinced		very convinced

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

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

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

2. a) To what extent did you enjoy participating in this study?

1	2	3	4	5	6	7
not all	little		some	quite a bit		very much

   b) Why?

3. a) How much scientific value do you think this study had?

1	2	3	4	5	6	7
not all	little		some	quite a bit		very much

   b) Why?

4. Had you heard anything about the study prior to participating in it? If yes, what had you heard?

Appendix G

Guidelines to Dimensionalization

The judges were instructed to dimensionalize the causal attributions from the subject's own perspective. If a sequence of linked events were verbalized by the subject, then the raters were directed to dimensionalize the original influence. For example, if the subject stated, "I could not sleep last night because of the thunderstorm", then the original cause (i.e., thunderstorm) was dimensionalized.

The judges' specific guidelines to the three dimensions are displayed below:

LOCATION: (of original cause)

1	2	3	4	5	6	7	8
EXTERNAL		SLIGHTLY EXTERNAL		SLIGHTLY INTERNAL		INTERNAL	

YOUR SCORE ON THE TEST WAS HINDERED/HELPED BY '----------'.

IS THIS INFLUENCE LOCATED INTERNALLY OR EXTERNALLY?

EXTERNAL	INTERNAL
- OUTSIDE YOURSELF	- INSIDE YOURSELF
- ENVIRONMENTAL	- PART OF YOURSELF

LIKELIHOOD OF FUTURE INFLUENCE: (retesting on another form in one month)

1	2	3	4	5	6	7	8
NOT LIKELY						EXTREMELY LIKELY	

HOW LIKELY WILL

'----------'.

CONTINUE TO HINDER/HELP YOU UPON RETESTING?

VARIABLE	STABLE
- NOT LIKELY TO BE INFLUENTIAL AGAIN	- LIKELY TO REMAIN INFLUENTIAL
- < 50% CHANCE	- > 50% CHANCE
- INCONSISTENTLY PRESENT	- RECURRENT
- IF -VE AND NOT INHERENTLY NECESSARY TO THE TASK	- IF INHERENTLY NECESSARY WHETHER +VE OR -VE
- IF CONTROLLABLE & -VE	- IF CONTROLABLE & +VE

GENERALITY OF INFLUENCE: (applies to present and future events)

1 2 3 4 5 6 7 8

NONE FEW MANY MOST

HOW MANY DAILY ACTIVITIES DOES

'----------'

HINDER/HELP?

SPECIFIC	GLOBAL
- RESTRICTED TO EXPERIMENT & SOCIAL EMPATHY TEST	- IMPLICATIONS WELL BEYOND THE EXPERIMENT
- APPLIES TO NONE/FEW DAILY ACTIVITIES (MATH TESTS)	- APPLIES TO MANY/MOST DAILY ACTIVITIES (SOCIAL RELATIONS)

Appendix H

The Calculation of the Self-serving Indices

The self-serving indices for locus, stability and generality reflect a ratio of the extent of influence and the appropriate dimensional scores to the highest score possible if the subject had been extremely self-serving. The extent of influence scale ranged from 1 to 9 with high scores reflecting a helpful influence. The three dimensonal scales ranged from 1 to 8 with high scores reflecting internality, stability, and generality. The self-serving indices for the recalled attributions was based only on the raters' dimensional scores, since an extent of influence score was not available for this measure. All the indices ranged in value from 0.0 to 1.0 no matter how many attributions were involved or in what combination of hindering and helping influences. Larger index values reflect a greater self-serving tendency. Thus compared to the controls, depressives were expected to have lower scores - regardless of outcome level.

A hypothetical example will serve to explain the calculation of the indices. Say, a subject reported that his/her personality and ability to associate words helped him/her on the S.E.T., but a head cold and noise in the hall hindered.

The subject's hypothetical scores for these attributions are displayed in the first part of Table 34

TABLE 34

The Attributional Scores of a Hypothetical Subject

	Initial Data			
DE	Factors	Influence	Locus	Stability	Generality
+	Personality	7	8	7	7
+	Ability	8	8	8	2
-	Head cold	1	6	2	2
-	Noise	4	1	3	1
	Modified Data				
DE	Factors	Influence	Locus	Stability	Generality
+	Personality	2	7	6	6
+	Ability	3	7	7	1
-	Head cold	4	2	6	6
-	Noise	1	7	5	7
	INFLUENCE SUM	10			

Note. Direction of effect (DE) indicates helping (+) and hindering (-) influences.

The raw data was modified in the following manner. Each extent of influence score was reduced by 5.0 and its absolute value was assessed(|value - 5 |). The three dimensional scores were reduced by 1, so that the scale range varied from 0 to 7 (value - 1). For those attributions that were hindering, the dimensional scores were converted

to the mirror image value on the 0 to 7 scales ((value - 3.5) X (-1) + 3.5). Thus high scores on the revised dimensional scales still reflect internal, stable and global characteristics when the influence is helping, but now when the influence is hindering high scales values reflect external, unstable and specific characteristics. In other words, self-serving attributions resulted in a high score on the revised dimensional scales. The modified data is displayed in the second part of Table 34

The self-serving indices were based on the following equation:

$$\text{INDEX} = \frac{\text{SUM (INFLUENCE X DIMENSION)}}{\text{(INFLUENCE SUM) X 7}} \qquad (1)$$

The numerator contains the weighted modified locus scores and the denominator contains the weighted locus scores if the subject had been extremely self-serving. The value of 7 in the denominator reflects the highest self-serving score a subject can receive on a given attributional dimension. The value of the dimensional index for locus is:

$$\text{LOCUS} = \frac{(2 \text{ X } 7) + (3 \text{ X } 7) + (4 \text{ X } 2) + (1 \text{ X } 7)}{10 \text{ X } 7}$$

$$= .71$$

The high value on the locus index reflects the fact that the hypothetical subject tended to internalize the facilitating causes and externalize the debilitating causes. Substituting the appropriate values into equation (1) for the remain-

ing dimensions, the subject scores at a high level of stability (.89) and a moderate level on generality (.66). If the scale value of .50 is used as a dividing line, then the hypothetical subject could be described as self-serving on all three indices.

The calculation of the above example is applicable to both open-ended and structured posttask attributions when either the subject or the raters provided dimensional scores. In the case of recalled attributions, the subjects provided neither extent of influence or dimensional values for their attributions. This procedure was essential because the recalled measure should not have been distorted by after-the-fact thoughts (i.e., secondary processing). Thus the calculation of the recalled indices was modified to account for the absence of a 9 point influence sale.

$$\text{INDEX} = \frac{\text{SUM OF DIMENSIONS}}{(\text{NO. OF ATTRIBUTIONS}) \times 7} \qquad (2)$$

If our hypothetical subject had recalled the same four attributions while retaining the same direction of effect and the raters provided the same dimensional scores, then the revised index value for locus would be:

$$\text{LOCUS} = \frac{7 + 7 + 2 + 7}{4 \times 7}$$

$$= .82$$

The subject has remained highly self-serving on locus. The revised values for stability (.68) and generality (.54) remain highly self-serving. The absence of an extent of influence variable in equation (2) has increased locus and decreased stability and generality.

Finally, the caution about the usage of the term 'self-serving index' will be restated here. The term refers only to the apparent complimentary implications for the attributor and not to the process by which the attributions were formed.

Appendix I

The Assessment of Depression in Normals

Depression rating scales were developed to measure the severity of pathology in persons already diagnosed as depressed (Carrol, Fielding, & Blashki, 1973). Research which uses self-report or observer rating scales to divide normal subjects into depressed and nondepressed groups has been criticized by Depue and Monroe (1978). He described such selection procedures as an inappropriate usage of rating scales for diagnostic purposes. An elevated score on a rating scale may be due to a number of factors independent of primary depression: a normal person who is unhappy, lost self-esteem or a loved object; secondary depression; and chronically mild depression. In addition, self-report scales assess a restricted range of information (i.e., the person's subjective estimates at the present point in time). The self raters may differentially interpret the meaning of items and they do not have the clinical perspective of clinicians for rating the severity of items. In the absence of other sources of history, psychosocial and clinical data, a raised score on a rating scale is diagnostically uninterpretable (Depue & Monroe, 1978).

Diagnoses are based typically upon such information as signs and symptoms, characteristics of onset, previous clinical course and behaviors, psychosocial characteristics, intermorbid adjustment level, and the presence or absence of other medical or psychiatric disorders (Depue & Monroe, 1978). In recent years diagnosis based upon idiosyncratic criteria have been supplemented by standardized structured interview formats, e.g., Feighner, Robins, Guze, Woodruff, Winokour, and Munoz (1972). The use of explicit diagnostic criteria validated by clinical research and presented in a structured interview format provides for the superior diagnosis of depression.

Nonetheless, the employment of structured diagnostic interviews to select subjects presents various research problems. Presumably the interviewers should have extensive clinical experience and they need to be well trained in the diagnostic procedure. A self-report scale could be used as a prescreening device to reduce the interviewing load. However, if a large sample size is required and/or there is a limited availability of trained and experienced clinicians, the researcher is often left with no alternative but to use a self-report scale to select subjects.

Given this "catch-22" situation, one needs to be cognisant of empirical evidence indicating that different selection techniques tap different populations of subjects. A few studies have compared depression in normals as assessed by self-report scales to diagnosed clinical depression (Ho-

garty & Katz, 1971; Katz, 1970; Weissman, Prusoff & Pincus, 1975; Zung, 1972). These studies showed that the severity of the mood dysfunction did not differentiate between normal and clinical depression; rather clinical depressives presented more severe behavioral, anxious, and somatic signs than normal depression. Another study prescreened normal volunteers with a self-report scale followed up by a diagnostic psychiatric interview (Brauzer & Goldstein, 1973). According to the authors, the level of depressive and anxiety pathology closely approximated patients treated with antidepressant and antianxiety medication by general practioners. Tentatively, one could say that validly extrapolating the results of normal depression to clinical depression may depend on the mode of assessment. Normal and clinical subjects may present similar symptomatology when diagnosed as depressed, but differences emerge when normals are assessed by self-report measures.

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