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INTERPERSONAL VERSUS IMPERSONAL PROBLEM SOLVING SKILLS  
IN A PUBLIC AND PRIVATE CONTEXT: AN EXAMINATION  
OF THE PARAMETERS OF THE LEARNED HELPLESSNESS  
MODEL WITH CLINICALLY DEPRESSED MALES

DISSERTATION

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By

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Forty volunteer patients from a Veteran's Administration Hospital served as subjects for this study. On the basis of Beck Depression Inventory scores, the subjects were divided into depressed (11 and above) and nondepressed (7 and below) groups. Subjects were assigned randomly to either public condition (experimenter present with the subject during experimental procedures) or a private condition (subject performed the procedures alone).

Subjects in each condition were asked to perform three tasks which varied in the amount of interpersonal involvement each required ranging from low through medium to high. The low interpersonal involvement task consisted of an anagram-solving procedure. Both the medium and high interpersonal involvement tasks employed modification of the Means-Ends Problem-Solving Procedure (MEPDS) (a measure of interpersonal problem solving ability).

Each subjects' performance was tape recorded and measures of Deliberation Time and number of correct

Solutions were taken as indices of cognitive problem solving ability. Additional measures were taken of the proportion of negative to total self-references made by the subject and a rating of perceived self-efficacy for each task.

The major findings included the fact that all subjects had significantly more difficulty problem-solving (i.e., Solutions) in the high interpersonal involvement task than in any of the others. This lends support to the position that depression, like other psychopathological disorders, has an interactional basis. Further support for this proposal was suggested by the depressed public group performing more poorly on Solutions than any other three groups did. Finally, it was found that there was a significant inverted U-shaped relationship between State Anxiety and performance on the low interpersonal involvement tasks (anagrams) for Solutions. This indicates the strong possibility that many of the earlier learned helplessness studies were assessing anxiety rather than depression-related deficits.

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INTERPERSONAL VERSUS IMPERSONAL PROBLEM SOLVING SKILLS  
IN A PUBLIC AND PRIVATE CONTEXT: AN EXAMINATION  
OF THE PARAMETERS OF THE LEARNED HELPLESSNESS  
MODEL OF CLINICALLY DEPRESSED MALES

Many traditional interpretations of depressive disorders have focused upon the role of intrapsychic mechanisms in producing and maintaining the individual's disorder (e.g., Abraham, 1927a, 1927b; Bibring, 1953; Freud, 1957; Mendleson, 1960). Even in early systems theory, which is sensitive to the interactional issues, the depressed person was often viewed as being a relatively closed system (Allport, 1960; Grinker, 1964). Essentially, the depressed individual repeats the same message without either receiving or utilizing feedback from others.

Some of the more contemporary theorists also have conceptualized depression more in intrapersonal than interpersonal terms. For example, Beck (1963, 1964, 1967, 1970; Beck, Rush, Shaw, & Emery, 1979) has suggested that distorted, dysfunctional cognitions are the source of depressive symptomatology. The extreme use of biased "automatic thoughts" results in what Beck has termed a "cognitive triad" of negative constructions about oneself, others in the environment, and the future. This triad

leads to feelings of worthlessness, hopelessness, and a depressed mood.

Another cognitively oriented model of depression, based primarily on the work of Seligman and his associates, is that of learned helplessness (Seligman, 1975). The basic premise of learned helplessness theory is that the organism learns that its behavior is unrelated to environmental outcomes, and this develops into the expectancy that environmental events are uncontrollable. This expectancy produces three deficits which are central in this theory's conceptualization of depression. The first is a motivational deficit which involves a decreased tendency to initiate voluntary responses. The second is a cognitive deficit which proposes that learning that an outcome is uncontrollable interferes with one's ability to later learn that responses do produce that outcome. The third is an emotional deficit which states that depressive affect is a consequence of learning that outcomes are uncontrollable.

A wide variety of organisms exposed to uncontrollable aversive events frequently have displayed a subsequent impairment in their ability to perform various tasks and to escape controllable aversive situations. This impairment has been demonstrated in dogs (Overmier & Seligman, 1967; Seligman & Maier, 1967), cats (Masserman, 1971), fish (Padilla, 1973), and rats (Maier & Testa, 1975; Seligman, Rosellini, & Kozak, 1975). A more complete

review of the literature on learned helplessness and infra-human organisms is available in Maier and Seligman (1976). Seligman (1975) has reported on the similarities between learned helplessness in animals and depression in humans, and a number of researchers have examined the effect of uncontrollable events in humans (e.g., Glass & Singer, 1972; Griffiths, 1977; Hiroto, 1974; Hiroto & Seligman, 1975; Klein, Fencil-Morse, & Seligman, 1976; Klein & Seligman, 1976; Logsdon, Bourgeois, & Levenson, 1978; Miller & Seligman, 1973, 1975; Roth & Bootzin, 1974; Roth & Kubal, 1975; Thornton & Jacobs, 1971). These researchers essentially have supported Seligman's position, although they have suggested some modifications.

Recently, on the basis of previous criticism (e.g., Blaney, 1977; Costello, 1978; Depue & Monroe, 1978, Golin & Terrell, 1977; Wortman & Brehm, 1975), Abramson, Seligman, and Teasdale (1978) have reformulated learned helplessness theory. This reformulation is very similar in many ways to Rotter's (1954, 1971) concept of low "freedom of movement." Freedom of movement is one of the three essential components which Rotter has ascribed to human needs. Freedom of movement is defined as the average level of the expectations that the behaviors one has learned to rely on to achieve certain satisfactions will actually lead to those satisfactions. When freedom of movement is low and need value (the importance of the reinforcement) is high,

defensive or maladaptive behavior usually results. Therefore, when persons have a low expectation of obtaining certain gratifications which are greatly desired, instead of learning how to achieve these goals, they learn how to avoid or defend themselves against the frustration and failure associated with the situation. Another alternative is that persons may try to achieve the goal by "irreal" ways. One of these ways could involve becoming depressed.

Even though reformulated learned helplessness theory is consistent with the above conceptualization, it is specifically directed toward depression and explanatory mechanisms include an attributional theory. Briefly, the reformulated learned helplessness theory is that when highly desired outcomes are believed improbable or highly aversive ones are believed probable, and the person expects that no responses in his/her repertoire will change this situation, helplessness (ranging to clinical depression) results. This reformulation also involves incorporating and modifying some existing cognitive attributional systems (Heider, 1958; Rotter, 1966; Weiner, 1972, 1974), and permits implications for the chronicity and generality of the helplessness. Another facet of the reformulation is that a fourth deficit, self-esteem, potentially is involved in learned helplessness. The attributional system consists of three dimensions: Internal-External, Stable-Unstable, and Global-Specific. The Internal-External dimension is

the degree to which an individual perceives that a desired outcome is contingent upon some response in his or her repertoire (Internal) or is not contingent upon any such response(External). The Stable-Unstable dimension is the chronicity of the helplessness deficits with stable factors being long-lived or recurrent and Unstable factors being short-lived or intermittent. For example, a failure may be attributed to a lack of ability (an Internal-Stable attribution) or to a lack of effort (an Internal-Unstable attribution). The Global-Specific dimension is related to the generality of the helplessness deficits. When deficits occur across a broad range of situations they are called Global, and when they occur across a narrow range of situations they are called Specific. The Internal-Stable-Global attributions for failure tend to produce the most devastating helplessness deficits in that lowered self-esteem also is experienced with Internal attributions for failure. This is referred to by Abramson et al. (1978) as "Personal Helplessness" as opposed to "Universal Helplessness."

A move toward a more interactional approach to the concept of depression, and behavioral pathology in general, has been proposed by Ferster (1965, 1973, 1974). He has stated that pathology develops as a result of a person's interaction with his/her environment and as an outcome of the person's reinforcement history. Within this framework,

depression is considered to be the reduced frequency of the emission of positively reinforced behavior, and therefore a functional analysis of the environmental events controlling the emission of this behavior is necessary to correct the situation. He has also suggested that one factor which can produce depressive behavior is the loss of an important environmental object which controls a large amount of the person's behavior. Lewinsohn and his associates have construed Ferster's proposals into a social learning context, and restricted the environmental objects which Ferster described to human objects within the environment.

Researchers who have conducted behavioral observations in group therapy and in the home setting have found that depressed individuals display longer response latencies, a reduced rate of social behavior, and a smaller proportion of positive social behavior (Libet & Lewinsohn, 1973) compared to nondepressed controls. In addition, a number of other researchers have found that depression is associated with a deficit in one's ability to interact socially (Lewinsohn & Atwood, 1969; Lewinsohn, Biglan, & Zeiss, 1976; Lewinsohn, Mischel, Chaplin, & Barton, 1980; Lewinsohn & Shaffer, 1971; Lewinsohn, Weinstein, & Shaw, 1969; Paykel & Weissman, 1973; Weissman & Paykel, 1974; Yongren & Lewinsohn, 1980), although it is not clear at this time whether these deficits are antecedent conditions to depression or a consequence of the disorder (Yongren & Lewinsohn, 1980). Specifically this

impairment of social skills results in a low rate of positive reinforcement, and consequently a reduction in both verbal and physical activity. In addition to a low positive reinforcement rate being associated with depressive behavior, Lewinsohn, Weinstein, and Shaw (1969), as well as Liberman and Raskin (1971), have pointed out the role of secondary gain in the form of social reinforcers such as sympathy and attention in maintaining depressive behavior.

Carrying the concept of secondary gain a step further, it has been proposed that depressive behavior is an active, instrumental response used to achieve pathological satisfaction of manipulative needs (Bonime, 1960, 1966), or as a learned pattern of coping with interpersonal stress by escaping or avoiding these stressful situations (Forest & Hokanson, 1975; Hokanson, Sacco, Blumberg, & Landrum, 1980; Sacco & Hokanson, 1978). The latter research efforts have lent support to the validity of conceptualizing depression as a primarily interpersonal process. While a strong case has been presented which claims that other psychopathological disorders such as schizophrenia have their basis in disturbed interpersonal relationships (e.g., Cameron, 1938, 1947; Haley, 1963; Levy, 1976; Shimkunas, 1972; Sullivan, 1944), Coyne (1976b) has argued convincingly for a similar interactional basis for depression. Further, there has been a substantial amount of experimental support for such a position from research addressing the learned helplessness

issues (e.g., Coyne, 1976a; Gotlib & Asarnow, 1979; Hammen & Krantz, 1976; Hokanson et al., 1980; Rizley, 1978; Sacco & Hokanson, 1978; Waid, Logsdon, Kennelly, & Thigpen, 1981; Yongren & Lewinsohn, 1980), as well as more recent research by systems theorists (e.g., Dell, 1981; Feldman, 1976; Keith, 1980; Rubinstein & Timmins, 1978; Watzlawick & Coyne, 1980). The latter findings have emphasized the subtle, but powerful interpersonal communication system involved in depression.

Assuming that there is a valid interpersonal basis for the etiology and maintenance of depressive behavior, there are some important implications for changes in the methodology employed in assessing deficits related to depression. Many of these changes will have special impact on the literature supporting learned helplessness as a model of depression, the types of dependent variables commonly used in learned helplessness studies, and the contexts in which these measures are taken.

#### Dependent Variables of Learned Helplessness Studies

Two major types of dependent measures typically have been employed in learned helplessness studies with humans. The first measure has been changes in the expectancy for success on chance versus skill tasks usually involving concept-formation tasks, guessing the order of symbols being presented, or a balancing task using apparatus covertly controlled by the experimenter (e.g., Abramson, Garber,



Edwards, & Seligman, 1978; Klein & Seligman, 1976; Miller & Seligman, 1973, 1975, 1976; O'Leary, Donovan, Kruger, & Cysewski, 1978; Sacco & Hokanson, 1978; Smolen, 1978).

The use of expectancy change as an index of the effects of learned helplessness arose when these investigators noted the similarity between the assumption in learned helplessness theory that responses and outcomes are independent and Rotter's (1966) concept of internal versus external locus of control. Using tasks the solutions of which appear to be determined either by chance or by one's skill, Rotter and his associates (James & Rotter, 1958; Phares, 1957; Rotter, Liverant, & Crowne, 1961) have shown that verbalized expectancies for future success are influenced by the outcomes of previous trials. They also found that the outcomes of previous trials have a greater effect on one's expectancies of future success when the person believes he/she is involved in a skill-determined task in which responses and outcomes are related to each other rather than in a chance-determined task in which response and outcome are seen as being independent.

Seligman and his co-workers (e.g., Klein & Seligman, 1976; Miller & Seligman, 1973, 1976) have found that subjects who were exposed to prior uncontrollable events (noise) demonstrate smaller expectancy changes for a successful outcome in a perceived skill determined task than subjects who were exposed to controllable noise or

no-noise control subjects. They concluded that helpless subjects develop a generalized expectancy of response-outcome independence.

However, Alloy and Abramson (1979) have pointed out that recent developments in attribution theory (Weiner, Nierenberg, & Goldstein, 1976), present a conceptual problem in the use of the chance-skill approach to assessing cognitive representations of response-outcome contingencies. Contrary to the learned helplessness assumption that expectancies of future success are a function of one's perceptions of response-outcome contingencies, Weiner et al. have proposed that these expectations are based upon the person's perception of the probability that factors which led to prior successes will be present again in the future. One implication of this proposal is that a high frequency of desirable responses in a situation can distort a person's perceptions of response-outcome contingencies and produce the belief that contingencies are operating when they are not (an "illusion of control").

There is empirical support for the above position (Jenkins & Ward, 1965; Wright, 1962) with the additional finding that depressed individuals tend to be more accurate in their perception of contingencies than nondepressed persons (Alloy & Abramson, 1979; Lewinsohn et al., 1980). This suggests a self-serving attributional bias for illusion of control operating in "normal" nondepressed persons.

These findings are in direct contradiction to the reformulated learned helplessness model, and Alloy and Abramson propose a revision to that model which states that depressives have a generalized expectancy of no control, but that this only interferes with initiation of responses (the motivational deficit) and not with the perception of response-outcome contingencies (the cognitive deficit). Also related to this issue is Bandura's (1977) distinction between the expectancy that outcomes are uncontrollable (outcome expectancy) and the belief as to whether or not that person can bring about the occurrence of that outcome (efficacy expectancy) which has not been clearly addressed in much of the research. There also has been some recent work by Garber and Hollan (1980) supporting this distinction. In short, this calls into serious question the use of the previously described expectancy changes as an index of depression as it has been used predominantly in the learned helplessness literature.

The second major dependent variable often used in learned helplessness research is anagram-solving performance measured in terms of latency to respond, number of errors, and number of trials to learn the pattern for solving the anagrams (e.g., Coyne, Metalsky, & Lavelle, 1980; Gotlib & Asarnow, 1979; Kilpatrick-Tabak & Roth, 1978; Miller & Seligman, 1975, 1976; Pittman & Pittman, 1979; Price, Tryon, & Raps, 1978; Sacco & Hokanson, 1978;

Seligman, 1975; Willis & Blaney, 1978). The results of the research using anagram performance as the dependent measure are not believed to be as clearly supportive of the learned helplessness model as they once appeared to be. Failures to replicate Seligman's results on each of the three indices of the anagram task (e.g., Benson & Kennelly, 1976; Cole & Coyne, 1977; Gatchel, Paulus, & Maples, 1975; Gatchel & Proctor, 1976; Sacco & Hokanson, 1978) were considered rather isolated incidents and did not initially present serious challenges to either the use of anagram tasks or the validity of the learned helplessness model itself.

Recently, however, some researchers have provided an alternative theoretical explanation. Coyne and his co-workers (Coyne, Metalsky, & Lavelle, 1980; Lavelle, Metalsky, & Coyne, 1979) have conceptualized learned helplessness as experimenter-induced failure and have proposed that it is the cognitive-attentional deficits associated with anxiety rather than depression which are responsible for the performance deficits observed in learned helplessness studies. Although in most learned helplessness studies researchers have not assessed anxiety (e.g., Hiroto & Seligman, 1975; Kellin & Seligman, 1976; Raps, Reinhard, & Seligman, 1980), others have included a measure of anxiety (e.g., Gatchel et al., 1975; Gatchel & Proctor, 1976; Miller & Seligman, 1975) and have found that

increases in both depression and anxiety occur after exposure to inescapable aversive stimuli. Still others point out the debilitating effects of anxiety on complex cognitive tasks (e.g., Holroyd, Westbrook, Wolf, & Badhorn, 1978; Mandler & Sarason, 1952; Sarason & Stoops, 1978; Wine, 1971, 1978). Therefore, critical questions can be raised about the assumption that depression is responsible for impaired anagram performance.

In an interesting study by Gotlib and Asarnow (1979), results were that anxiety rather than depression was more predictive of anagram performance. They attributed this result to the nature of the anagram task (an impersonal task) and compared performance on the anagram task with performance on a task which was interpersonal in nature. They administered the Means-Ends Problem-Solving Procedure (MEPS) (Platt & Spivak, 1975), a measure of interpersonal problem-solving ability, to both mildly and clinically depressed university students as well as nondepressed controls. They found essentially that the depressed subjects did poorer on the interpersonal problem-solving task (MEPS) than their nondepressed counterparts, while there were no significant differences between these groups on the impersonal task (anagrams). Also, state anxiety was positively correlated with anagram performance suggesting a facilitation effect (Logsdon & Levenson, 1975;

Roth & Kubal, 1975), while state anxiety was unrelated to performance on the MEPS.

### The Contexts of Learned Helplessness Research

In support of the position which Gotlib and Asarnow (1979) have taken, that interpersonal problem-solving deficits are associated with depression, Platt and Spivak (1975) have conducted and surveyed extensive research in the area of interpersonal problem-solving skill and its relationship to psychological adjustment (e.g., Platt, Scura, & Hannon, 1973; Platt & Siegel, 1976; Platt, Siegel, & Spivak, 1975; Platt & Spivak, 1972a, 1972b, 1973; Platt, Spivak, Altman, Altman, & Peizer, 1974). They have concluded that when compared to control subjects, individuals with psychiatric and substance abuse disorders had more difficulty generating means of solving interpersonal problems. Further, the authors have stated that the cognitive abilities involved in interpersonal problem-solving are not the same as those tapped on impersonal tasks, and that performance on these impersonal, abstract tasks does not predict competence in dealing with real life interpersonal situations. Although the research performed by Platt and his associates does not specifically address the diagnostic category of depression, the previously described study by Gotlib and Asarnow (1979) involves depression and supports the impersonal versus interpersonal distinction in problem-solving skills. In addition, Rizley

(1978) has suggested that "the specific distortion in cognition associated with depression may vary depending on the impersonal or interpersonal nature of the experimental situation" (p. 47). He has cautioned against constructing theories of depression strictly on the basis of impersonal experimental paradigms and recommends that future research evaluate this impersonal-interpersonal dimension.

Consistent with Rizley's position, Gong-Guy and Hammen (1980) have called for an examination of the parameters of the types of events which are affected by depression. As further evidence of the need for this type of exploration, one of the most frequently cited references proclaiming the "generality of learned helplessness in man" is that of Hiroto & Seligman (1975) who demonstrated helplessness effects across several different tasks. However, all of these tasks were impersonal in nature and the issue of a comparison between impersonal and interpersonal tasks was not examined in their early studies.

Another parameter of events affecting the behavior of depressed persons noted by Coyne et al. (1980) has been ignored to a great extent in learned helplessness research. This parameter is the effect of demand characteristics (Orne, 1962). Demand characteristics, according to Orne, result from the tendency of the behavioral sciences to use the experimental paradigm of the physical sciences. He makes the point that, unlike the inanimate objects studied

in physics, human subjects are not passive responders to stimuli. Within the context of our culture, certain roles (such as subject and experimenter) are well known and imply certain mutual expectations. Certainly, experimenters who have had a background in psychopathology have role expectations about depressives. It is also likely that the average person has expectations about depressives. These role expectations can be communicated and received in very subtle, unconscious ways and can decidedly influence one's behavior. In order to help control for these effects, Orne recommends an examination of what circumstances and with what kinds of subject populations demand characteristics become a significant influence on one's behavior. The results of Polivy and Doyle's (1980) study on the effects of demand characteristics on laboratory-induced mood states supports Coyne et al.'s contention that demand characteristics influence significantly the results of learned helplessness studies. The issue of demand characteristics takes on added importance given the relatively limited variability of the experimental design and subject populations (i.e., university students) predominantly used in this research.

A conceptual extension of the study of demand characteristics involves the observation of behavior under public (experimenter present) versus private (experimenter not present) conditions. Fenigstein, Scheier, and Buss



(1975) have identified three components of self-consciousness related to the public-private dimension. The first component is a private self-consciousness factor which involves attending to one's inner thoughts and feelings. The second is a public self-consciousness component which emphasizes a general awareness of oneself as a social object that has an effect on others which includes taking another's perspective. The third factor is social anxiety defined as discomfort in the presence of others. They view public and private self-consciousness as a process of self-focused attention while social anxiety is a reaction to this process.

One finding in the public-private research that has important implications for demand characteristics is that the perceived importance of a task increases when it is performed in a public setting (Cohen, Brehm, & Latane, 1969; Keisner, 1969). This appears relevant to the conclusions drawn by Roth and Kubal (1975) and supported by Logsdon and Levenson (1975) that the debilitating effects of a learned helplessness manipulation are more likely to be demonstrated when an important task is involved rather than a relatively unimportant one. Another study which has implications for a depressed population is that of Keisner (1969), who found that when subjects were exposed to strong expectancy disconfirmation, they developed negative affect only when exposed under public conditions.

This leads to an interesting methodological question illustrated in a study by Sacco and Hokanson (1978). They reported that differences existed between depressed and nondepressed groups in a public situation on a perceptual task measuring expectancy change, but there were no differences in expectancy change in a private situation. They also found no differences between groups on an anagram task in either a public or private setting. In view of the previous discussion as to the questionable validity of the use of expectancy change as an index of depression, the failure to find differences between groups based on the anagram task leaves room for speculation as to whether the public-private dimension is a valid one in studying depression, whether there is something intrinsic to the task employed which is not sensitive to the deficits created by depression, or some combination of these two possibilities. In addressing this issue, Sacco and Hokanson noted that one of the factors which needs to be considered in evaluating their results is the "perceived humanism of the tasks," especially since both of their tasks were impersonal in nature.

The issue of the "perceived humanism of the tasks" relates directly to the previous discussion of the impersonal versus interpersonal nature of the task used to experimentally induce or assess the effects of depression. To the knowledge of the present author, there have been no

studies to date which have concurrently examined the impact of these two dimensions of the experimental setting (i.e., public-private and impersonal-interpersonal) upon the performance of clinically depressed persons.

The issue just described is a major focus of the present research effort. In addition, modifications in procedure have been made in order to produce a more genuine distinction between the public and private setting. For example, while some studies have attempted to manipulate the public-private dimension by telling the subjects that their results would be made known to others or would be known by no one, the experimenter still interacted with the subject to some extent during the task (e.g., Brickman & Seligman, 1975; Cohen et al., 1969; Keisner, 1969). Sacco and Hokanson (1978) attempted to reduce the amount of interaction by giving feedback on an impersonal anagram task via electromechanical signals which allowed communication without use of language and paralanguage modalities. In a later study (Hokanson et al., 1980) which was tantamount to a private-interpersonal setting, they found that depressed individuals who communicated with same-sex "normals" via a pattern of lighted panels did demonstrate patterns of interaction which were unique to the depressed group. However, none of these studies have successfully eliminated the element of ongoing communication of some kind during the testing procedure in the private setting.

This is a critical point since, as Coyne (1976a) has demonstrated, even when depressives interact with "normals" over the telephone without face-to-face contact they still communicate in a distinctive depressive style which influences the behavior of others.

In summary, the question has been raised as to the validity of the way in which the deficits associated with depression typically have been measured. The possibility that the learned helplessness research mostly has been measuring deficits resulting from anxiety rather than depression was also presented. The differing positions on this question appear to be related to one's conceptualization of depression, how it occurs, and what maintains it. Research involving two potentially important parameters of the tasks used to assess depression (i.e., the public or private setting and the impersonal or interpersonal nature of the task) implies a social basis for depression. The point also was made that these two parameters have been conceptually and operationally entangled and no study as yet has isolated and concurrently examined them. One final important issue identified concerns as to whether or not depressed individuals display both a motivational and cognitive deficit or whether only motivational deficits are produced.

The purpose of the present study is primarily to examine the relative contributions of the public-private

and impersonal-interpersonal dimensions to certain deficits resulting from depression. Earlier researchers suggest that the tasks assessing depressive deficits can be ordered along a continuum ranging from those demanding the least interpersonal involvement to those demanding the most interpersonal involvement. The present study adopts this conceptual framework in classifying various tasks in different settings. The present project examines the utility of conceptualizing depression as in interpersonal process which should be assessed by tasks demanding a relatively large amount of interpersonal involvement. Further, the present study examines the effect of tasks on cognitive, motivational, and behavioral deficits manifested in depressed individuals. In order to maximize generalizability to the population most relevant for diagnostic or treatment implications, groups of hospitalized clinically depressed persons are compared to hospitalized nondepressed, but psychologically disturbed individuals. A more specific description of the objectives of this study follow below.

The process of assessing the effect of the level of interpersonal involvement upon the manifestation of deficits in depression requires the concurrent examination of both the setting and the nature of the task employed. The present study has attempted a two-fold manipulation of the setting by maximizing anonymity and minimizing

communication in the private setting and performing the converse (minimizing anonymity and maximizing communication) in the public setting. The degree of interpersonal involvement of the tasks has been manipulated so as to range from low (an impersonal anagram task) through medium (an interpersonal MEPS task) to high (an exchange of MEPS stories between the subject and experimenter). Cognitive, behavioral, and motivational measures have been taken during these tasks.

The first hypothesis is that public situations requiring interpersonal involvement elicit poorer cognitive, behavioral, and motivational performance among depressed than nondepressed patients, and that in public situations high interpersonal involvement elicits poorer performance among depressed patients than less interpersonal involvement.

The second hypothesis is that level of state anxiety rather than level of depression is a better predictor of the performance of patients having low interpersonal involvement in either public or private situations. Conversely, in public situations of moderate or high interpersonal involvement, level of depression is expected to be a better predictor of performance than state anxiety.

## Method

### Subjects

Forty male inpatients at a Veterans Administration hospital served voluntarily as subjects. In order to be considered for inclusion in the present study subjects had to meet certain criteria patterned generally after those of Abramson, Garver, Edwards, and Seligman (1978) and Waid et al. (1981). Based on a chart review and request for volunteers, 138 patients met the following qualifications: (a) current hospitalization of less than 6 months, (b) age between 21 and 64 years, (c) minimum of an eighth-grade education, (d) no evidence of marked organicity, (e) no evidence of a primary thought disorder, and (g) no ECT within the past year. Seventy-eight of these patients volunteered for participation and were contacted for a brief interview by Experimenter 1 (an advanced doctoral student in clinical psychology) prior to beginning the research procedures. Of this number 67 patients were still considered appropriate for participation and were administered the Shipley Institute of Living Scale (Shipley, 1940), and 66 of the patients attained the criterion score of 90 or above on the verbal IQ score to be allowed to continue with the study. The one subject who failed to meet this requirement was allowed to continue through the procedures at his request, but his data was not included in any of the final analyses. He was then debriefed in

in the manner described below. Eleven of the patients subsequently changed their minds and chose not to participate, 5 failed to perform the experimental procedures correctly and their data was discarded, and 10 fell into the range on the Beck Depression Inventory (BDI) (Beck, 1967), which was neither sufficiently depressed nor non-depressed to meet the criteria which is explained below.

Immediately after completing the Shipley, the subjects were administered the BDI, and based upon these scores an equal number of volunteers who met the above criteria were assigned to either a depressed group or nondepressed group consistent with previous research (Waid et al., 1981). Volunteers assigned to the depressed group had a score of 11 or higher on the Beck Depression Inventory (BDI) (Beck, 1967), and had been identified as having the symptoms of a primary depressive disorder of nonpsychotic proportions. In those cases of volunteer patients who were hospitalized on a nonpsychiatric basis, an additional criterion was employed. This was that the attending physician considered the depressive disorder to be a "significant component" of the patient's symptom picture.

Assignment to the nondepressed group required that a patient score 7 or below on the BDI. Volunteer patients who scored 8, 9, or 10 on the BDI were excluded from the study to help insure that subjects were genuinely depressed



or nondepressed and to eliminate those who scored in the marginal range. This interval of exclusion is based on the standard error of measurement of the BDI ( $SE = 4.33$ ).

### Experimenters

Experimenter 1 was a 30-year-old male advanced doctoral student in clinical psychology. He was of medium height and build and was attired in slacks, dress shirt, and tie during all interactions with the subjects. His role involved conducting the preliminary interview and screening of the patients as well as the debriefing after the experimental procedures were administered and completed. He also scored the initial assessment instruments and performed the random assignment of subjects to either the public or private setting. He behaved in a courteous and pleasant manner, but did not attempt to become particularly friendly with the subjects.

Experimenter 2 was a 22-year-old male with a B.A. degree in psychology. He was also of medium height and build and was dressed in slacks and dress shirt during interactions with the subjects. Experimenter 2 was blind to both the affective state of the subjects and to the experimental hypotheses. His role involved carrying out the experimental procedures described below. He was simply introduced to the subject by Experimenter 1, given the subject's number, and informed as to which set of procedures to follow. When the procedures were completed

he informed Experimenter 1 who accompanied the subject to another room for debriefing. The demeanor of Experimenter 2 was courteous and pleasant toward the subjects with no attempt to become particularly friendly.

### Instruments

The Beck Depression Inventory (BDI) (Beck, 1967) was selected for use in the present study for the reasons cited by Alloy and Abramson (1979). The inventory is self-administered, relatively short, capable of providing quantitative information for assessing depth of depression, and relatively well validated. Several studies have supported the reliability and validity of the BDI (e.g., Beck, 1967; Bumbery, Oliver, & McClure, 1978; Metcalf & Goldman, 1965; Miller & Seligman, 1973). Also the BDI has been used extensively in learned helplessness research and has been found to correlate highly with several performance deficits (Klein & Seligman, 1976; Miller & Seligman, 1976). The BDI consists of 21 groups of symptoms which are rated by subjects from 0 to 3 as to level of severity. Beck (1967) has suggested that scores of 13 or 14 are clinically significant, but the criterion scores most frequently used to indicate depression range from 9 and above (Alloy & Abramson, 1979; Gotlib & Asarnow, 1979; Miller & Seligman, 1975) to 12 and above (Rizley, 1978).

The Shipley Institute of Living Scale (Shipley, 1940) frequently has been employed as a relatively short, valid,

and reliable screening instrument for certain intellectual abilities (Abramson et al., 1978; Waid et al., 1981; Weeks, Logsdon, & Doster, 1980). Since abstract thinking and concentration deficits are frequently associated with depression, only the vocabulary section of the Shipley Institute of Living Scale was used in this study as an index of the less transient aspects of intellectual abilities. This is consistent with other researchers who have employed a vocabulary screening instrument (e.g., Gotlib & Asarnow, 1979; Price, Tryon, & Raps, 1978; Waid et al., 1981).

Speilberger's State-Trait Anxiety Inventory (STAI) (Speilberger, Gorsuch, & Lushene, 1970) is a scale designed to independently measure state, or temporary, anxiety and trait, or chronic, anxiety. The STAI easily is administered and factor analytic studies (Kendall, Finch, Auerbach, Hooke, & Mikulka, 1976) have supported the state-trait distinction. Only the 20 items referring to state anxiety were administered in the present study since concern was for how anxious the person felt at the time he was involved in the study rather than his pervasive level of anxiety. The statements on the STAI were rated on a 4-point scale ranging from "not at all" to "very much so."

The Means-Ends Problem-Solving Procedure (MEPS) (Platt & Spivak, 1975) is a measure of interpersonal problem-solving ability on which subjects are asked to

resolve a series of interpersonal conflict situations. The MEPS contains 10 story stems each of which involve the beginning and outcome of an interpersonal problem situation. The subject is asked to imagine himself or herself in the situation and describe the actions he or she would take in order to achieve the given outcome. In view of Platt and Spivak's position that it is not necessary to use all 10 stories to obtain a valid index of interpersonal problem-solving ability, two sets containing three MEPS stories each were assigned randomly for use in the medium and high involvement tasks in the present study (see Appendix A). Consistent with Gotlib and Asarnow's (1979) study, the stories were presented to the subjects in the second person rather than the third in order to increase their ego involvement in the task. As noted previously, Platt and Spivak (1975) have compiled numerous studies demonstrating the reliability and validity of the MEPS.

The anagram task is a series of 20 anagrams taken from a list of five-letter anagrams developed by Tresselt and Mayzner (1966) and used extensively in learned helplessness research (Gotlib & Asarnow, 1979; Hiroto & Seligman, 1975; Miller & Seligman, 1975; Sacco & Hokanson, 1978). These 20 anagrams were presented in the standard sequence 1-4-2-5-3 so that, while each anagram can be solved individually, it is more efficient to recognize the

patterning across the sequence and apply it to each subsequent anagram (see Appendix B).

The perceived self-efficacy scale is a 10-point Likert-type scale ranging from "not at all confident" to "very confident." A different form was used for the low involvement task (see Appendix C) and the medium and high involvement tasks (see Appendix D). Each basically asked the subject the extent to which he felt confident that he could perform the activities necessary to succeed on the task. In the low involvement task, the focus was on the subject's ability to carry out the cognitive manipulations necessary to solve the anagram. In the medium and high involvement tasks, the focus was on the subject's ability to carry out the interpersonal problem-solving activities he had just described in his MEPS stories.

#### Apparatus

Two Panasonic cassette tape recorders (model number RQ-337) were used to record the subjects' verbalizations during the tasks. Six 3 X 5 inch (7.62 X 12.7 cm) index cards with one MEPS story stem per card were used to present the MEPS stimuli to the subjects. There were also three additional index cards of the same size on which a story stem in the MEPS format was printed as well as a prerecorded cassette tape with the experimenter's response to each story stem on it (see Appendix E).

Anagrams were presented on a set of 20 3 X 5 inch (7.62 X 12.7 cm) index cards on a spiral wire. Each card had one anagram written on the front and the solution to each anagram was on the back of the card so that it could be easily read when the side of the card with the letters in scrambled order was flipped over. Also there was one blank card on the spiral between each anagram card.

#### Procedure

Experimenter 1 met all subjects on their wards and determined in a brief interview and record review whether or not each person was eligible to participate in the study. If the patient adequately satisfied the initial criteria, he was given an informed consent document to read which stated essentially that the study was gathering normative data on hospital patients' performance on various types of tasks (see Appendix F). If the subject agreed to participate in the research he signed the consent form and was then administered the BDI, the Shipley Institute of Living Vocabulary Scale, and the STAI (A-State).

After being divided into depressed and nondepressed groups in the previously described manner, subjects were randomly assigned by Experimenter 1 in equal numbers from each group into either a public setting condition (PU) or a private setting condition (PR). Within each of these conditions, all subjects were exposed to a low interpersonal

involvement task (LO), a medium interpersonal involvement task (MED), and a high interpersonal involvement task (HI) in that order. It was assumed that this ordering of tasks would vary from that of least to most interpersonal involvement, and pilot work substantiated this assumption (see Appendix G). This order of presentation was used to minimize any detrimental carry-over effects which could be anticipated within the framework of learned helplessness theory. This anticipation is based upon the previous discussion suggesting that the perceived importance of the task is positively related to level of interpersonal involvement, and that learned helplessness deficits are more likely to be experienced on a more important task.

After completing the initial assessment and assignment to condition, each subject was escorted to a room offering privacy for the experiment. The room was approximately 3m X 4m and was modestly decorated with a bookcase, a table, two chairs, and two pictures. Upon reaching the room the subject was introduced to Experimenter 2 who was given the subject's experimental number and instructed to assist the subject in completing one of the conditions described below.

The distinction between public and private conditions is based on earlier research (Sacco & Hokanson, 1978) which simply manipulated the presence or absence of another person such as an experimenter during the time subjects

worked on assigned tasks. In the public condition the experimenter was present in the experimental room at all times and engaged in scheduled verbal interactions with the subject. The present procedure involved a two-fold approach to maximizing the saliency of the public setting. First there was the implication that the subject's performance could be identified by others as his own, and secondly, the task was conducted in a face-to-face manner where a sense of communication was enhanced. In the private condition the subject self-administered the tasks and was alone in the room during task completion, and was joined by the experimenter only for transitional intervals when the latter set up the next task and left. This procedure entails a two-fold manipulation of the private setting. First was the implication that the subject's performance would remain totally anonymous. Secondly there was absolutely no communication with the subject during the actual performance of the task.

The dimension of interpersonal involvement was manipulated by the nature of the tasks the subject was assigned to perform. Briefly, the low interpersonal involvement task involved an anagram test in which the subject solved items which were impersonal in content (see Appendix B). Thus the subject's involvement concerned problem-solving with letters in words rather than social stimuli in interpersonal situations.



Medium and high interpersonal involvement tasks were alike in that in both situations the subject self-disclosed about his attempts to solve interpersonal problems (see Appendix A). The two situations were different in that during the high involvement task the experimenter also self-disclosed prior to the subject's doing so about similar problems. The rationale for the manipulation of the experimenter's self-disclosure, i.e., nonself-disclosure in the medium involvement task and personal disclosure in the high involvement situation is based on the work of others (Shimkunas, 1972). In this study self-disclosure by the experimenter is viewed as (a) modeling of personal revelation and (b) demanding a more intimate and ongoing interpersonal relationship when the experimenter is present than absent from the experimental room. In addition to the interpersonal content of the setting, the self-disclosure by the experimenter was intended to introduce an interactional element into the situation which was expected to heighten the intensity of the relationship between the subject and the experimenter and increase the subject's sense of interpersonal involvement.

#### Public Condition

Low interpersonal involvement task. The subject was seated at a table across from Experimenter 2 who said:

As you know we will be examining how you perform on several different tasks. Your subject number is \_\_\_\_\_. Please be sure to place it on all of your materials so it can be identified as yours later.

The materials for this task included the spiral booklet of anagram cards and a tape recorder. The anagram task was then presented with the instructions being essentially the same as those of Miller and Seligman (1975), and were stated by Experimenter 2 after he had turned on the tape recorder as follows:

This is an anagrams task. Anagrams are words with their letters scrambled, and your task is to unscramble the letters so that they form a word. When you think you know the word, tell me what it is and I will tell you if you are right or wrong. The anagrams are contained in this booklet. Now, there may be a pattern or principle by which you can solve the anagrams, but that is up to you to figure out. Do not open the booklet and do not turn any pages until you are told to do so. Your subject number is \_\_\_\_\_. Please remember that number and place it on all of your materials so that they may be identified as yours later. I will tape record this task in order to examine it later.

Prior to beginning the task, the subject was asked to complete the self-efficacy scale as to how confident he

felt that he could succeed on the task. The experimenter then instructed the subject to open the booklet to the first anagram and to tell the experimenter the word when he thought he knew it. Response latency was measured later from the tape recording beginning from the time the experimenter finished instructing the subject to turn each card and ending when the subject said his answer. Feedback as to the correct response was given verbally by the experimenter after each anagram. This procedure continued until the subject responded to all 20 anagrams. The subject was then asked to wait while preparations were made for his next task.

Medium interpersonal involvement task. During this phase, Experimenter 2 and subject remained seated and there was a cassette tape recorder and three 3 X 5 inch (7.62 X 12.7 cm) index cards face up with one MEPS story stem on each card on the table. The experimenter then turned on the tape recorder and gave the instructions for each subject (patterned closely after Platt and Spivak, 1975) which were as follows:

In this procedure we are interested in your imagination. You are to make up some stories. For each story you will be given the beginning of the story and how the story ends. Your job is to make up a story that connects the beginning that is given to you with the ending given you as if it had happened to you and

tell that story to me. In other words you will make up the middle of the story and tell it to me. Be sure to state your subject number prior to telling each story so that it can be identified as yours later.

The experimenter then picked up the card with the first story on it and handed it to the subject saying, First state your subject number. Then read this card out loud, make up a story about it, and tell it to me.

This procedure was repeated for each of the three stories. After this task was finished, the experimenter asked the subject to complete the self-efficacy scale regarding his confidence that he could perform the activities necessary to succeed in the interpersonal situations he has just described. The subject was then asked to wait while preparations were made for his next task.

High interpersonal involvement task. In this phase of the experiment, the subject and Experimenter 2 remained seated as before, but on the table were two cassette tape recorders and three index cards with different MEPS stories on them. The prerecorded tape of the experimenter's own "personal experiences" as well as three 3 X 5 inch (7.62 X 12.7 cm) index cards with those story stems on them were also on the table. The tape

recorder was turned on and the instructions for each subject were as follows:

In this procedure we are more interested in your experiences than in your imagination although you may use both. You will be given the beginning and the ending of three stories and you may discuss the ways you may have handled such a situation before as well as how you would handle it now. Remember to connect the beginning given to you with the ending of each story. But first, I want you to listen to a tape recording I made about one of my own personal experiences. My experiences were about this situation on this card. After you have heard about my experiences, then I would like to hear about yours.

The experimenter then began to play the prerecorded story of his own "personal experiences" on the other machine. When the prerecorded story was finished the experimenter handed the subject the card with the first story on it and said:

First state your subject number. Then read this card aloud and tell me your story about it.

The same procedure was followed for the remaining two MEPS. After this was finished, the experimenter asked the subject to complete the self-efficacy scale regarding his confidence that he could perform the activities necessary to succeed in the situations he had just described.

Following the completion of this task the subject was debriefed by Experimenter 1 as to the basic experimental hypotheses and was assured that his results would remain confidential. No mention was made of the individual results from the psychometric data in order to avoid compromising any treatment procedures currently in progress. Any other questions were answered to the satisfaction of the subject and he was thanked and dismissed.

#### Private Condition

Low interpersonal involvement task. The subject was escorted into the testing room by Experimenter 2 who then said:

For the purposes of our record-keeping, your subject number is \_\_\_\_\_. However, since we are interested in group norms and do not want to relate any of this information to you as an individual, please do not mention your subject number during taping or place your number on any of your materials.

The materials for this task were the same as in the low involvement task for the public condition, the anagram booklet and tape recorder. The tape recorder was turned on and instructions to the subject were given by Experimenter 2 as follows:

This is an anagrams task. Anagrams are words with their letters scrambled, and your task is to unscramble the letters so that they form a word. Since I will

not be in the room during this task, you will be tape recording this process and will say your answers into the tape recorder. When you begin this task by opening this booklet in front of you to the first anagram, immediately say the number of the anagram printed in the upper right hand corner of the card. For example, when you open the booklet say "Number one." When you think you know the word say it clearly into the recorder. You may then turn just that one anagram card over and read the correct solution on the back of the card. When you are ready to begin the next anagram just flip the blank card over and say the number printed on the card, then solve the anagram. There may be a pattern or principle by which you can solve the anagrams, but it's up to you to figure it out. I will be waiting outside and when you have finished all 20 anagrams please open the door and inform me.

At this time Experimenter 2 handed the subject the self-efficacy scale and asked him to complete both the scale and then the anagram task. After the subject opened the door, he was asked to wait while preparations were made for the next task. Also at this time his materials were covertly identified with his subject number for later use.

Medium interpersonal involvement task. The physical setting and materials in this condition were identical to those in medium interpersonal involvement tasks in the public condition. The instructions were similar except that they were designed to maximize the subject's anonymity and allow for the absence of the experimenter and any communication with him during the performance of the task. The tape recorder was turned on and the instructions were given as follows:

In this procedure we are interested in people's imaginations. You are to make up some stories. For each story you will be given the beginning of the story and how the story ends. Your job is to make up a story that connects the beginning that is given to you with the ending given you as if it had happened to you. Before you begin I will leave the room and you will record your stories on this tape recorder. Because in this task we are interested in group norms and not individual performance, be sure that you do not report your name, subject number, or any other identifying information on the tape because these stories will be kept completely anonymous and will not be related to you personally in any way. When you are ready to begin pick up the first card, read it out loud, and then make up a story about it and say it into the tape recorder. Continue this procedure



for all three cards. When you have finished all three, please open the door and inform me.

When the subject opened the door, the experimenter brought the subject back into the room and gave him a perceived self-efficacy scale. After instructing the subject to put no identifying marks on the scale, the experimenter left the room until the scale was completed. The subject was then asked to wait while preparations were made for the next task.

High interpersonal involvement task. The physical setting and materials for this condition were identical to those in the high interpersonal involvement task for the public condition. The subject was provided with the three index cards with MEPS stories previously assigned for this condition. He also had the index cards and prerecorded stories of the experimenter's own "personal experiences." After turning on the tape recorder, the following instructions were given verbally by Experimenter 2:

In this procedure we are more interested in your experiences that your imagination although you may use both. You will be given the beginning and ending of three stories and you may discuss the way you may have handled such a situation before as well as how you would handle it now. Remember to connect the beginning given to you with the ending of each story.

But before you tell each of your stories, I would like you to listen to a tape recording I made about one of my own personal experiences. My experiences were about the situations on these cards with the top one being first. After I leave the room you are to read this card with the beginning and ending of a story on it. Then turn on this tape recorder (experimenter demonstrates) on which I have recorded my own experiences in this situation. Then pick up your first card, read it out loud into the other recorder, then tell your story into the tape recorder. After you have finished your story read the card with my next experience on it and listen to my experience on the tape. Then repeat the same procedure you did for the first story. When you have finished all three cards please open the door to inform me.

After the subject opened the door, the experimenter brought the subject back into the room and gave him a perceived self-efficacy scale. After instructing the subject to put no identifying marks on the scale, the experimenter left the room until the scale was completed. At this time the subject's materials were identified with his subject number for later use, and he was thanked and debriefed as described earlier.

### Dependent Measures

Two qualitatively different sets of dependent measures were taken from the tape recorded data. The first set involved indices of problem-solving ability. Regarding the low involvement task, the dependent measures traditionally employed in learned helplessness research have been: (a) the mean response latency for the series of anagrams, (b) the number of errors, defined as the number of trials in which a correct response was not given within 100 seconds, and (c) the number of trials to criterion for learning the anagram pattern, defined as solving three or more anagrams in 15 seconds or less. In the present study the third was omitted since recent research (Coyne et al., 1980; Lavelle et al., 1979; Price et al., 1979) has noted that subjects often meet this criterion without actually discovering the pattern. Further, the concept of response latency has been labeled Deliberation Time and is employed across all three tasks. In the low involvement task it is defined as the time from presentation of the stimulus word until a response is completed. Deliberation Time in the medium and high involvement tasks is defined below. The other dependent measure from the low involvement task is the number of correct solutions defined as the number of trials in which a correct response was given within 100 seconds. Thus these measures will be used as indices of

cognitive problem-solving skill of a relatively impersonal nature.

While there are several problem-solving dependent measures for the MEPS described by Platt and Spivak (1975), research employing the MEPS with depressed persons (Gotlib & Asarnow, 1979; Waid et al., 1981) has suggested one which appears to be very useful and appropriate. This measure is the number of relevant means defined as each discrete step which is effective in enabling the hero of the story to reach the resolution stage of the story or to overcome an obstacle preventing the hero from reaching the goal in the story. The number of relevant means of the MEPS in the medium and high involvement tasks, although more interpersonal in nature, was assumed to be analogous to the number of correct solutions in the low involvement task and have been labeled as such. In order to assess the reliability of measurement, the number of relevant means was scored independently by two examiners trained in the MEPS scoring system. The Pearson correlation between these scorings was  $r = .86$ . Further, in both the medium and high involvement tasks Deliberation Time has been defined as the time from the completion of the presentation of the stimulus story stem until the subject's response is completed. These measures are used as indices of problem-solving skill in the medium and high interpersonal involvement tasks.

The second major type of dependent measure which was used from the recording involved obtaining an index of symptom manifestation. During the experimental conditions, all verbalizations made by the subject were recorded and a cumulative frequency count was taken of any negative self-statements, remarks questioning one's abilities, or similar statements made by the subject during the entire process. A ratio was then formed between this measure and the total number of self-references. In order to assess the reliability of measurement, the number of negative self-references and the total number of self-references were scored independently by two examiners. The resulting Pearson correlation between the scorings was  $\underline{r} = .85$ .

The perceived self-efficacy scale consisted simply of a score ranging from 1 to 10 reflecting the degree of confidence the subject had that he would be able to successfully perform the task. A higher numerical value reflects a higher degree of confidence. This dependent variable is employed as an indirect assessment of one's motivational status by using the subject's perceived self-efficacy as an index of his willingness to undertake the task.

#### Transformation of Raw Data

In order to make the problem-solving measures comparable across tasks, the number of correct solutions

(hereafter called Solutions) were transformed in the following manner. Since the low involvement task had a maximum range of 0 to 20 and the highest scores on the medium and high involvement tasks were 11 and 12 respectively, the latter scores were considered analogous to a perfect score on the low involvement task and a linear transformation was performed to convert the medium and high task Solutions to a scale ranging from 0 to 20. To maintain consistency the Deliberation Time measures were also converted into a scale ranging from 1 to 20. The scores from each of the three tasks were divided into 20 intervals such that each frequency distribution approached normality (low: skewness = .540, kurtosis = -.668; medium: skewness = 1.106, kurtosis = .703; high: skewness = .654; kurtosis = -.583). Each score within each task was then assigned a value from 1 to 20 based upon which interval it was contained in. A score of 1 represents the least amount of Deliberation Time (the fastest response) and 20 represents the largest Deliberation Time (the slowest response). This procedure allowed comparability of measures while providing enough categories to permit treatment as continuous data in further analyses.

### Results

Group means and standard deviations for all relevant measures as well as BDI and STAI scores are presented in Table 1.

Table 1

Means and Standard Deviations for all Relevant Variables  
and BDI and STAI Scores for each Mood X Setting Combination ++

	Depressed Public		Depressed Private		Nondepressed Public		Nondepressed Private	
	<u>X</u>	<u>SD</u>	<u>X</u>	<u>SD</u>	<u>X</u>	<u>SD</u>	<u>X</u>	<u>SD</u>
Solutions								
Low	7.90	2.96	14.10	3.84	10.60	4.97	15.30	3.50
Med	8.36	5.01	13.27	6.36	11.27	4.18	12.55	4.96
Hi	5.00	3.51	13.50	5.12	8.00	4.07	9.17	4.53
Deliber- ation Time								
Low	10.70	5.17	8.10	5.90	8.30	5.70	8.10	4.28
Med	4.60	1.65	8.10	4.01	7.60	5.83	8.50	6.90
Hi	6.10	3.07	10.30	3.83	9.20	6.07	8.60	6.43
Prop. Neg Self-Stmt								
Low	1.50	1.39	1.10	1.37	1.24	.92	1.57	3.41
Med	.98	1.79	.31	.28	.35	.18	.32	.26
Hi	.55	.62	.34	.13	.24	.22	.32	.22
Self- Efficacy								
Low	5.90	2.33	7.00	2.31	7.00	2.71	7.20	2.82
Med	5.30	2.83	6.60	1.78	8.00	2.54	6.60	2.55
Hi	5.70	3.23	6.40	2.07	6.70	2.91	6.30	2.41
BDI	26.90	10.75	23.00	8.34	5.60	2.22	5.00	2.26
STAI	64.70	7.65	52.40	13.09	34.70	10.65	39.30	9.20
AGE	37.30	9.14	38.20	12.70	42.70	12.77	44.90	11.51
VIQ	108.30	7.13	110.90	7.59	108.10	9.22	108.40	6.79
Education (years)	12.70	1.95	13.70	1.95	12.50	1.65	13.50	2.07

++<sub>N</sub> = 10

### Examination for Covariates

Pearson Product-Moment Correlation Coefficients (Ferguson, 1971) were generated involving the following variables for each subject: Verbal IQ (VIQ), age, educational level, Solutions, Deliberation Time, the proportion of negative self-referent statements, and the scores on the self-efficacy scales (see Table 2). This was done to determine the existence of possible significant covariates for involvement in later factorial analyses. However, none of the correlations attained an absolute magnitude of .40 or greater, so no covariates will be involved in further analyses (Myers, 1972, p. 348).

### First Hypothesis

The first hypothesis of the present study was that public situations requiring interpersonal involvement elicit poorer cognitive, behavioral, and motivational performance among depressed than nondepressed patients and that in public situations high interpersonal involvement would elicit poorer performance among depressed patients than less interpersonal involvement. In order to examine the issues of this hypothesis, a 2 X 2 X 3 ANOVA was computed on each of the dependent variables for the following factors: Mood (depressed versus nondepressed patient type) by Setting (public versus private setting) and with repeated measures on tasks (low versus medium versus high



Table 2  
Correlation Matrix to Examine Data for Possible Covariates

	Verbal IQ	Age	Education Level
Solutions			
Low	.15	-.05	.15
Med	.22	-.31	-.31
Hi	.07	-.37	-.37
Deliberation Time			
Low	.07	-.20	.08
Med	.24	-.18	.18
Hi	.22	-.20	.02
Proportion Neg. Self-Stmt			
Low	.00	.26	.15
Med	-.05	.06	-.09
Hi	-.01	.12	-.05
Self-Efficacy			
Low	.30	-.15	-.20
Med	.00	.01	-.31
Hi	.10	-.03	-.26

interpersonal involvement tasks). The results of these analyses are presented below.

Self-efficacy measures. The Self-efficacy scale is viewed as a measure of an individual's motivation or willingness to undertake the task being addressed. The analysis of variance computed on self-efficacy scores was nonsignificant both with respect to the main effects and their interactions. A summary of this ANOVA is presented in Table 3. Contrary to expectation, the strength of self-efficacy was not found to be significantly reduced

Table 3

## Summary of Analysis of Variance for Self-Efficacy Scales

SOURCE	df	MS	F
<u>BETWEEN SUBJECTS</u>	<u>39</u>		
A (Mood)	1	20.01	1.75
B (Setting)	1	1.87	.16
AB	1	18.40	1.61
Subjects within groups	36	11.46	
<u>WITHIN SUBJECTS</u>	<u>80</u>		
C (Task)	2	2.63	.63
AC	2	2.23	.54
BC	2	1.30	.31
ABC	2	2.43	.59
C X Subjects within groups	72	4.16	

by the effects of the high interpersonal involvement task in a public setting with depressed subjects.

Negative self-reference. Negative self-statements included all self-referent behavior in which the patient portrayed himself in a negative, unfavorable, or socially undesirable light. These are behaviors symptomatic of depressed patients. A summary of the analysis of variance on the proportion of negative self-statements to total self-statements is presented in Table 4. The only result which attained statistical significance when proportion

Table 4  
Summary of Analysis of Variance for Proportion  
of Negative Self-Statements

SOURCE	df	MS	F
<u>BETWEEN SUBJECTS</u>	<u>39</u>		
A (Mood)	1	.46	0.25
B (Setting)	1	.68	0.37
AB	1	2.25	1.24
Subjects within groups	36		
<u>WITHIN SUBJECTS</u>	<u>80</u>		
C (Task)	2	11.62	7.18**
AC	2	.45	0.28
BC	2	.30	0.18
ABC	2	.13	0.08
C X Subjects within groups	72		

\*\* $p < .01$

of negative self-statements was used as the dependent variable was a main effect of tasks,  $F(2,72) = 7.18$ ,  $p < .01$ .

A comparison of means using the Newman-Keuls procedure indicated that the mean for the low involvement task

( $\bar{X} = 1.35$ ) was significantly greater than either of the other two tasks ( $\bar{X}_{\text{medium}} = .49$ ,  $\bar{X}_{\text{high}} = .36$ ) at  $p < .05$

(see Table 5). The means for the medium and high involvement tasks did not differ significantly from each other

(see Figure 1). Thus all subjects engaged in proportionately

Table 5

Summary of Newman-Keuls Procedure for Main Effect of  
Tasks on Proportion of Negative Self-Statements

	High	Medium	Low		
	.36	.49	1.35	r	$S_{\bar{C}q} .99 (r, 72)$
High	---	.13	.99**	3	.17
Medium		---	.86**	2	.15

\*\*  
 $p < .01$

more negative self-referent behavior in the context of low interpersonal involvement than in contexts engaging them in greater interpersonal involvement. This finding was in contrast to the expectation that a greater proportion of negative self-statements would occur when depressed subjects were engaged in a high interpersonal involvement task within a public setting.

Deliberation time. Deliberation Time in the low involvement tasks was defined as the time from presentation of the stimulus word until a response was completed, and within the medium and high involvement tasks as the time from completion of the presentation of the stimulus story stem until the subject's response was completed. The

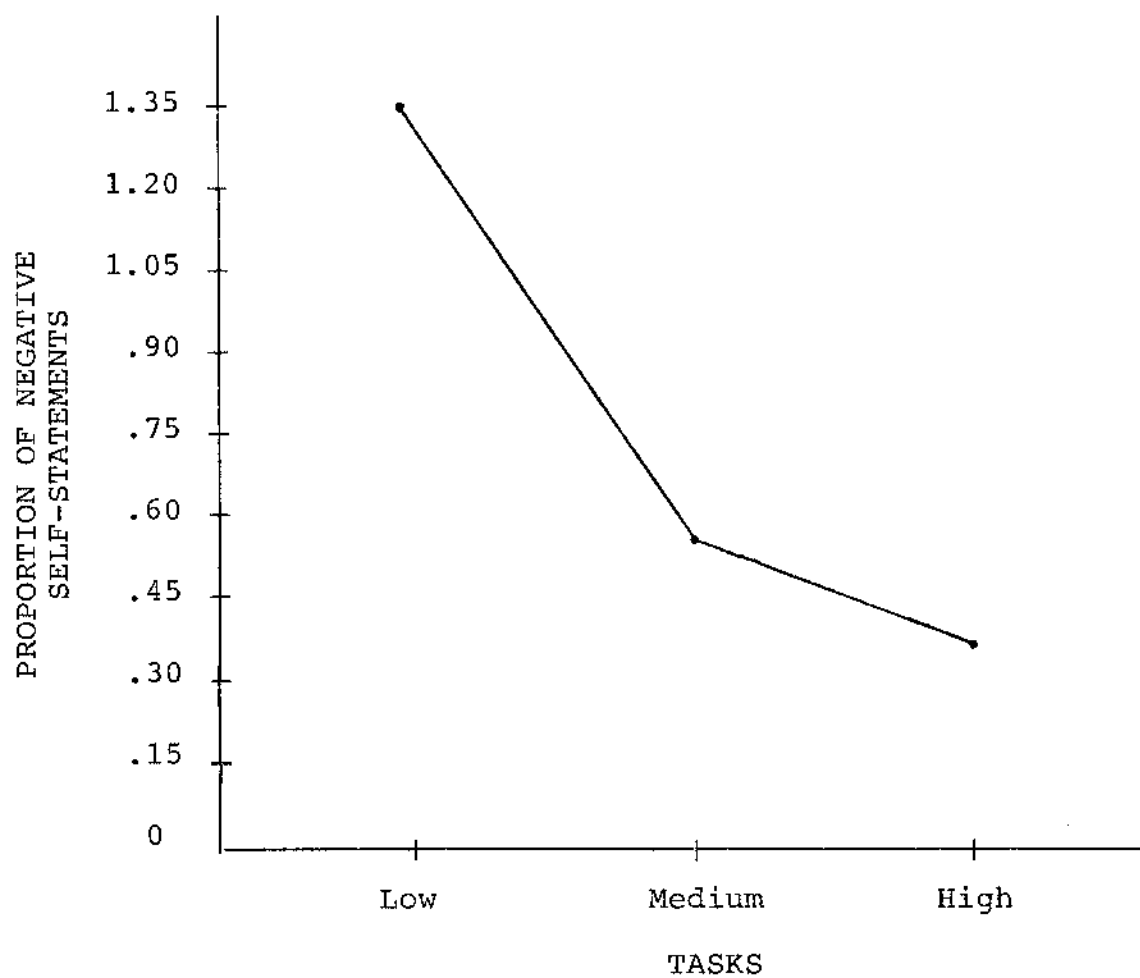


Figure 1. Main effect of tasks for proportion of negative self-statements.

results of the analysis of variance performed on this measure are summarized in Table 6. Neither the main effects nor their interactions were significant. Thus, expectations that Deliberation Time would be longer among depressed subjects working on a high interpersonal involvement task in a public setting was not confirmed by the results.

Solutions. Within the low involvement task, Solutions represented the number of trials in which a correct response to an anagram was given within 100 seconds, while within the medium and high involvement tasks Solutions represented the number of relevant means defined as each discrete step which was effective in enabling the hero of the story to reach the resolution stage of the story or to overcome an obstacle preventing the hero from reaching the goal in the story. With regard to the first hypothesis, results with the Solutions variable were supportive of the expectation that depressed subjects would have more difficulty with tasks in the context of a public setting. The analysis of variance on this measure is summarized in Table 7. There was a significant main effect of setting,  $F(1,36) = 16.71$ ,  $p < .01$ . A comparison of means revealed that those subjects in the private setting ( $\bar{X} = 12.98$ ) produced significantly more correct Solutions to the problem situations than those subjects in the public setting ( $\bar{X} = 8.52$ )

Table 6

## Summary of Analysis of Variance for Deliberation Time

SOURCE	df	MS	F
<u>BETWEEN SUBJECTS</u>	<u>39</u>		
A (Mood)	1	4.80	.10
B (Setting)	1	22.53	.45
AB	1	20.83	.42
Subjects within groups	36	49.64	
<u>WITHIN SUBJECTS</u>	<u>80</u>		
C (Task)	2	29.63	2.52
AC	2	21.70	1.49
BC	2	38.93	2.67
ABC	2	34.03	2.34
C X Subjects within groups	72		

(see Figure 2). There was also a significant main effect of tasks,  $F(2,72) = 8.30$ ,  $p < .01$ . An examination of means using the Newman-Keuls procedure indicated that all subjects in the high interpersonal involvement task ( $\bar{X} = 8.92$ ) performed significantly more poorly than those in both the medium ( $\bar{X} = 11.36$ ) and low ( $\bar{X} = 11.98$ ) involvement tasks at  $p < .01$  level (see Table 8). The medium and low involvement tasks did not differ significantly from each other (see Figure 3). Further, the Mood X Setting interaction approached significance,  $F(1,36) = 3.63$ ,  $p < .06$ .

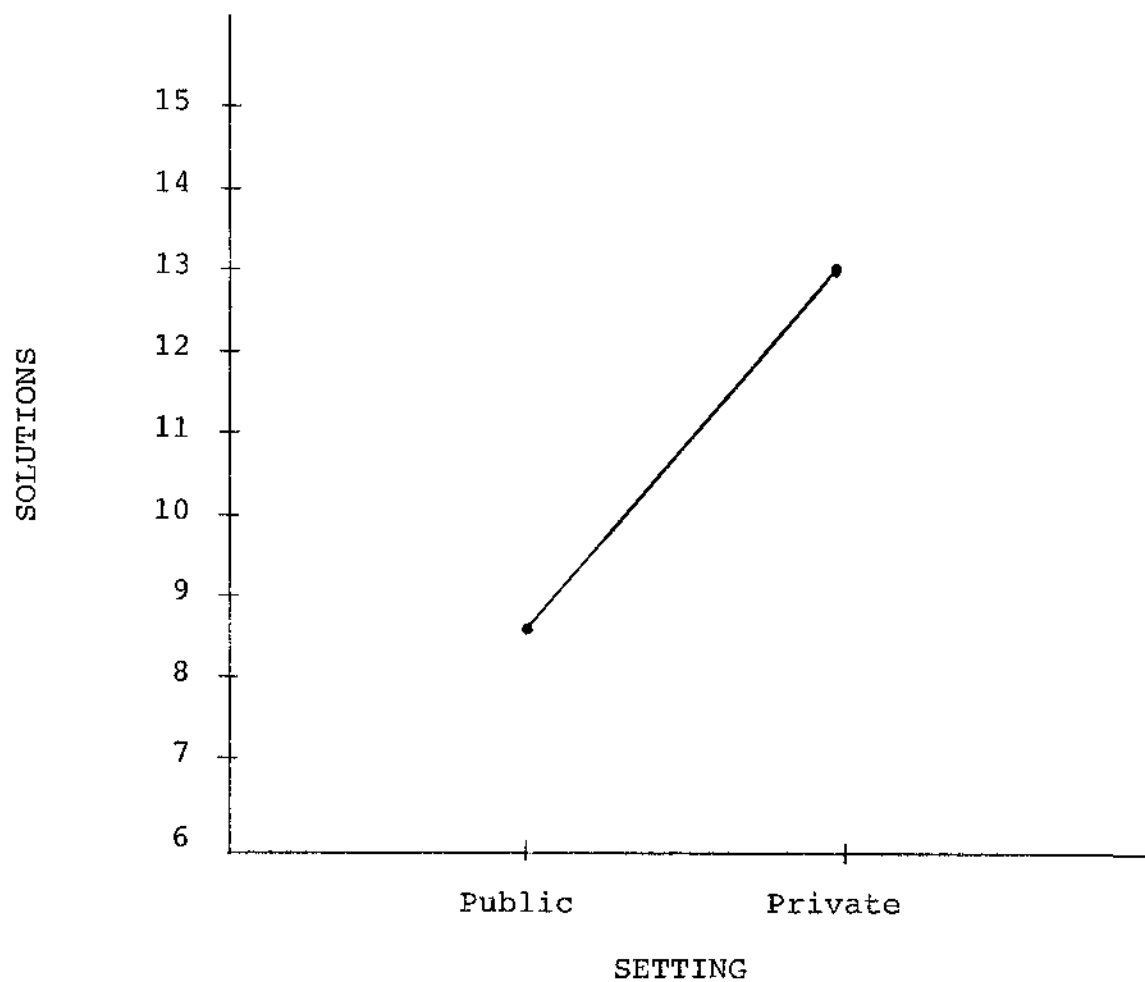


Figure 2. Main effect of setting for solutions.



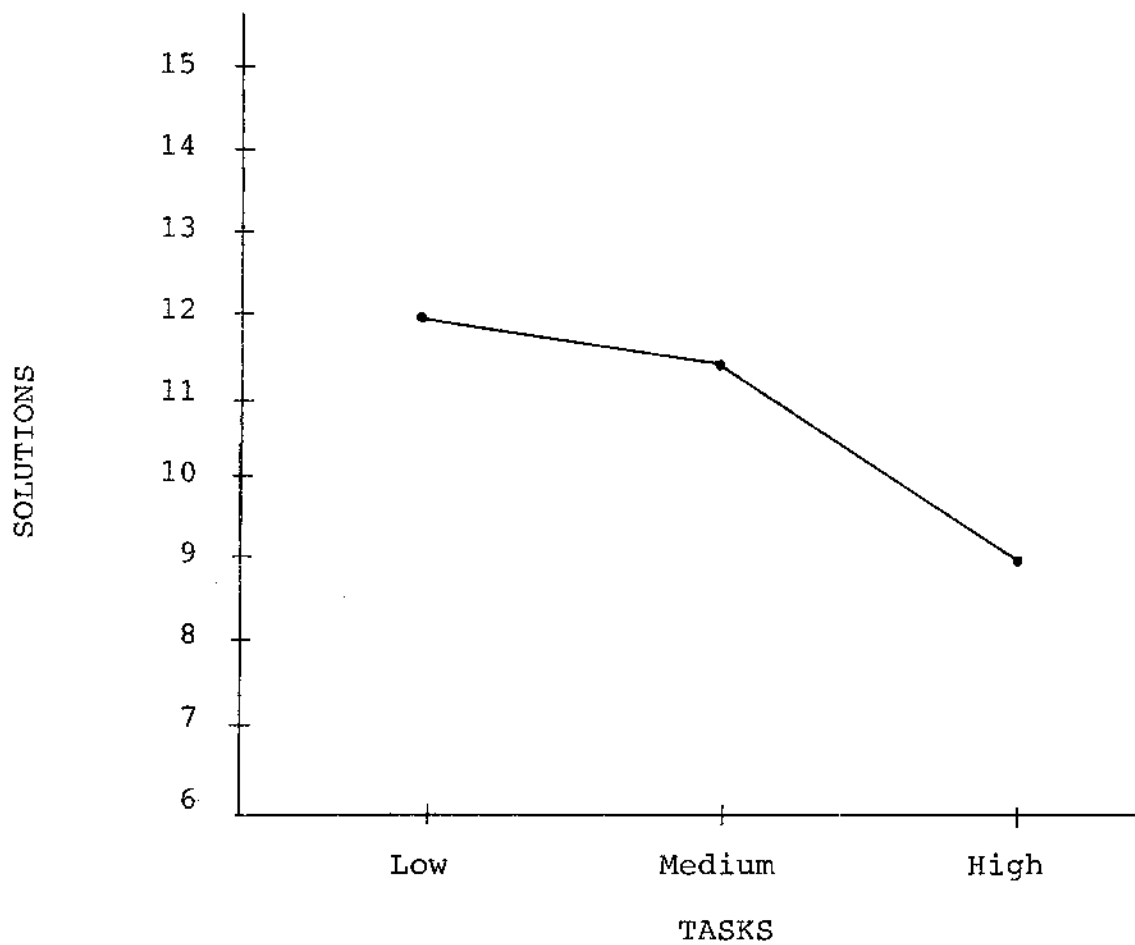


Figure 3. Main effect of task for solutions.

Table 7  
Summary of Analysis of Variance for Solutions

SOURCE	df	MS	F
<u>BETWEEN SUBJECTS</u>	<u>39</u>		
A (Mood)	1	18.79	.53
B (Setting)	1	596.23	16.71**
AB	1	129.58	3.63 <sup>+</sup>
Subjects within groups	36		
<u>WITHIN SUBJECTS</u>	<u>80</u>		
C (Task)	2	104.77	8.30**
AC	2	17.79	1.41
BC	2	14.97	1.19
ABC	2	21.77	1.72
C X Subjects within groups	72		

\*\*  $p < .01$

<sup>+</sup>  $p < .06$

Since this was pivotal to one of the major hypotheses, and recent research (Gotlib, 1982) has reflected the finding that the relationships between hospitalized depressed and hospitalized nondepressed subjects may be indicative of much stronger relationships of a similar nature between hospitalized depressed and nonhospitalized "normal" subjects, this finding will be discussed further. A comparison of means using the Newman-Keuls procedure revealed

Table 8  
Summary of Newman-Keuls Procedure for  
Main Effect of Tasks on Solutions

	High	Medium	Low	r	$S_{\bar{C}}q_{.99}(r, 72)$
	8.92	11.36	11.98		
High	---	2.44**	3.06**	3	1.37
Medium		---	.62	2	1.20 ( $q_{.95} = .91$ )

\*\*  $p < .01$

that the depressed-public group ( $\bar{X} = 7.09$ ) performed significantly more poorly than all other groups (nondepressed-public ( $\bar{X} = 9.96$ ), nondepressed-private ( $\bar{X} = 12.34$ ), and depressed-private ( $\bar{X} = 13.62$ )) (see Table 9). Also the nondepressed public group did significantly poorer than both the nondepressed-private and depressed-private groups which did not differ significantly from each other (see Figure 4).

### Second Hypothesis

The second hypothesis was that the level of state anxiety rather than level of depression would be a better predictor of the performance of subjects in the low interpersonal involvement tasks in either a public or private setting.

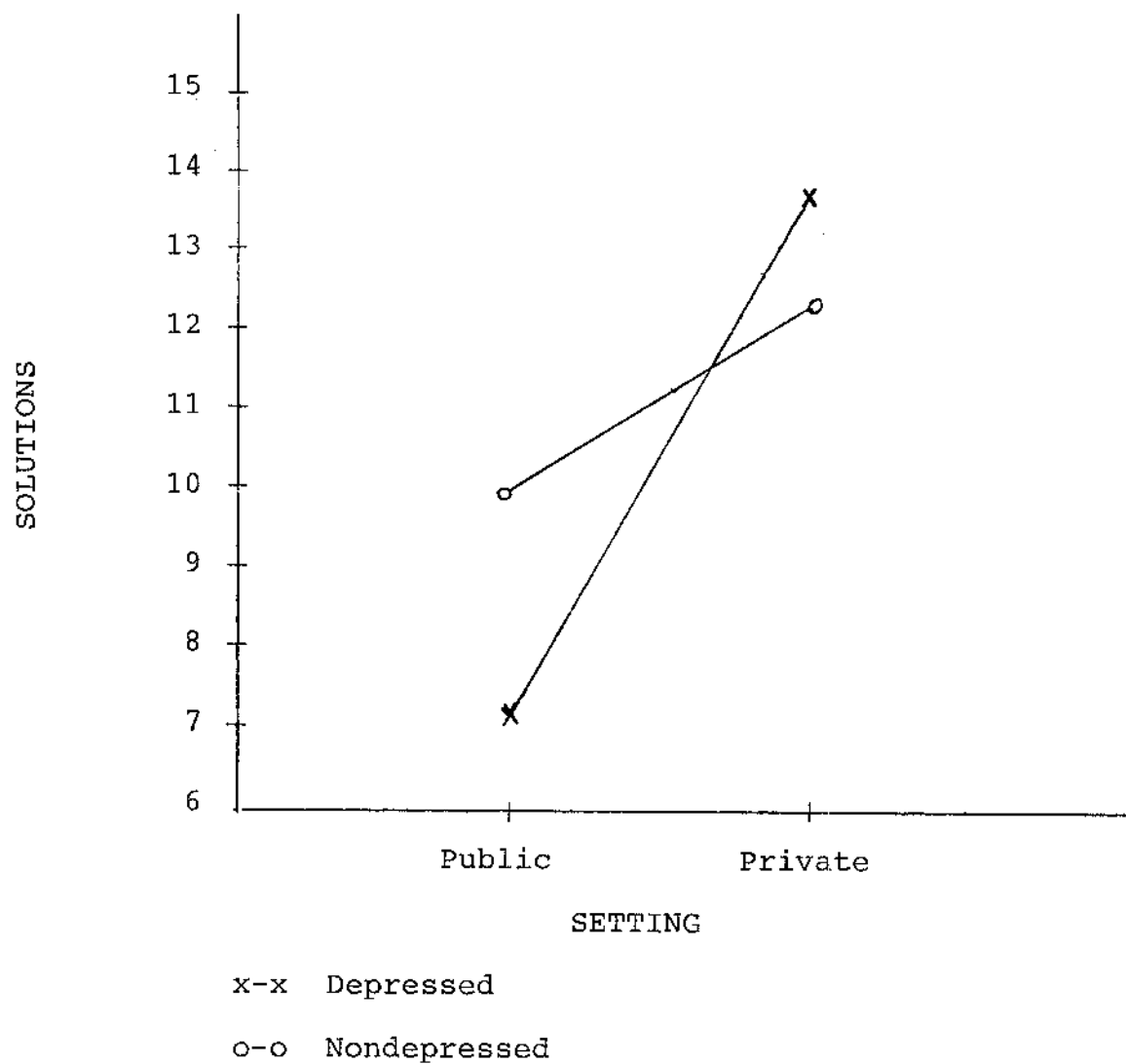


Figure 4. Mood X setting interaction for solutions.

Table 9

Summary of Newman-Keuls Procedure for Mood X Setting  
Interaction Effects on Solutions

	$b_1$	$b_2$	$b_3$	$b_4$	$r$	$S_{Bq} .95(r, 36)$
	7.09	9.96	12.34	13.62		
$b_1$	---	2.87*	5.25*	6.53*	4	2.27
$b_3$		---	2.38*	3.66*	3	2.05
$b_4$			---	1.28	2	1.69

Note.  $b_1$  = Depressed-Public Condition

$b_2$  = Depressed-Private Condition

$b_3$  = Nondepressed-Public Condition

$b_4$  = Nondepressed-Private Condition

\* $p < .05$

Conversely, in the public setting with medium or high interpersonal involvement tasks, level of depression was expected to be a better predictor of performance than state anxiety. Although the overall relationship between BDI and STAI scores was strong ( $r = .80$ ), the data was plotted to examine the relationships between each of these scores and solutions separately for each task (low medium, and high interpersonal involvement). It was discovered at the time that some of the relationships appeared to be curvilinear in nature, so a series of multiple regression analyses were employed to test the

first component of the second hypothesis (i.e., that STAI scores would be more predictive than BDI scores of performance on the low involvement task) in a way which would also allow evaluation of the strength of this curvilinear trend. The first analysis used Solutions in the low involvement task as the criterion with a linear component of the STAI scores being one predictor and a quadratic (U-shaped) component of the STAI scores being the second predictor. A second analysis was performed with the same criterion (low task Solutions), but with linear and quadratic components of the BDI scores as the predictors. Similar analyses were conducted using the same sets of predictors, but using individually the Solutions in the medium involvement task and finally the high task Solutions as the criteria and the results are presented in Table 10. The results revealed that the only variable, either linear or quadratic, which accounted for a statistically significant proportion on the variance was the quadratic component of the STAI scores when predicting the performance on Solutions in the low involvement task,  $F(2,37) = 4.17$ ,  $p < .05$  (see Table 10). The curve of best fit was constructed for the data (Hart, 1966) and appears in Figure 5. Examination of Figure 5 reveals the inverted U-shaped relationship between STAI scores and Solutions on the low involvement task. Although the curvilinear nature of the function was unexpectedly strong, it is still

Table 10

Summary of Multiple Regression of Linear and Quadratic Components of STAI and BDI Scores on Solutions in each Task (Low, Medium, High Interpersonal Involvement)

LOW						
Step	Variable	Multiple R	R <sup>2</sup>	R <sup>2</sup> Change	Simpler	F
1	STAI (Linear)	.20	.04	.04	-.20	1.51
2	STAI (Quad)	.43	.18	.15	-.24	4.17*
1	BDI (Linear)	.26	.069	.069	-.26	2.82
2	BDI (Quad)	.26	.069	.00	-.26	1.39
MEDIUM						
1	STAI (Linear)	.26	.07	.07	-.26	2.69
2	STAI (Quad)	.26	.07	.00	-.25	1.31
1	BDI (Linear)	.16	.02	.02	-.16	.94
2	BDI (Quad)	.19	.03	.01	-.18	.66
HIGH						
1	STAI (Linear)	.16	.03	.03	-.16	.97
2	STAI (Quad)	.17	.03	.00	-.17	.56
1	BDI (Linear)	.03	.00	.00	.03	.03
2	BDI (Quad)	.12	.01	.01	.00	.26

\*  $p < .05$

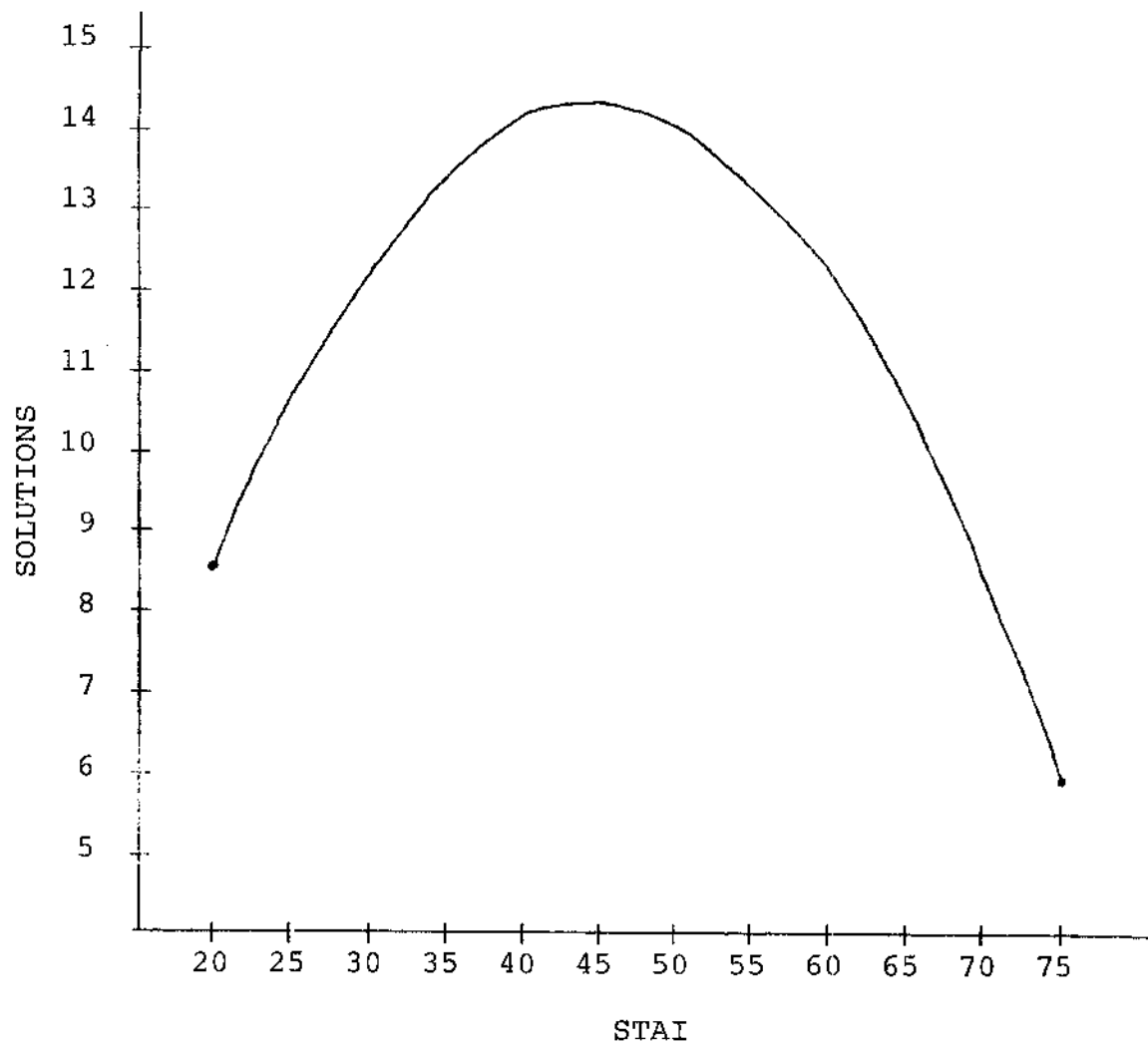


Figure 5. Best fit curve between STAI scores and solutions in the low interpersonal involvement task. The equation is  $y = -.0039x^2 + .835x - 4.418$ .



consistent with the hypothesis that STAI scores would have a significantly stronger relationship to performance on Solutions in the low involvement task than would BDI scores.

The remaining component of the second hypothesis was to be tested with an analysis similar to that employed by Gotlib and Asarnow (1979) who used a t-statistic calculated to compare the relative strengths of the correlation coefficients between STAI scores and Solutions to those between BDI scores and Solutions in the PU-MED and PU-HI conditions only (Ferguson, 1971). However, since none of the correlation coefficients attained statistical significance (see Table 11), there was no justification for a t-comparison. Thus the expectation that BDI scores would be significantly more highly correlated than STAI scores with Solutions in these two conditions was not supported.

### Discussion

While there were no significant effects for the analysis involving the Self-Efficacy Scales (motivation index), examination of Table 1 reveals that the scores on the SES were the lowest for the depressed-public group across all three tasks. While not attaining statistical significance it demonstrates a trend in the predicted direction, i.e., that those subjects in this group expressed the least confidence in their abilities to carry out the necessary procedures to solve the problem and

Table 11

Correlation Coefficients Between BDI and Solution  
and STAI and Solutions for each Setting X Task Combination<sup>++</sup>

	Public		Private	
	BDI	STAI	BDI	STAI
Low Involvement	-.26	-.03	-.25	-.35
Medium Involvement	-.19	-.24	-.08	-.24
High Involvement	-.24	-.30	.38	.08

<sup>++</sup> n = 20

therefore they were less motivated to undertake the task. One of the reasons this result may have failed to reach the necessary statistical level for significance involves a methodological issue which will surface repeatedly during this discussion. The fact that the two groups being compared are depressed psychiatric patients and nondepressed psychiatric patients with no nonpsychiatric control group makes this a very conservative research design. Since there are many possible reasons why a nondepressed group of psychiatric patients could also have cognitive, behavioral, and motivational deficits, any differences which do attain statistical significance carry a great deal of weight regarding the specifics of depressive disorders over and above any commonalities these patients might share with those having other psychiatric disorders.

For the same reasons, those results which demonstrate a marginally significant trend may be worth closer examination. As further support for this position, recent research noted earlier by Gotlib (1982) indicated that nonsignificant trends between depressed and nondepressed psychiatric patients in such areas as social skill and number of self-reinforcements and self-punishments were indicative of statistically significant differences between depressed psychiatric patients and nondepressed "normal control subjects" in the same direction as the nonsignificant trends. This implies, therefore, that the Self-Efficacy Scale scores of the subjects in the depressed public group may have been significantly lower than those of a nonpsychiatric control group, but this is a question for future research.

The finding that the experimental tasks differed significantly in terms of the proportion of negative self-statements was unexpected and appears to be an artifact of the nature of the tasks. Since Gotlib and Asarnow (1979) were the only researchers previously to employ both anagrams (low interpersonal involvement) and MEPS (medium and high interpersonal involvement) tasks in the same study and they gathered no behavioral data such as the proportion of negative self-statements, this may be useful information for follow-up research in this area. While it is difficult to determine with certainty, it

appears likely that the concreteness and immediate feedback inherent in the anagrams task may have contributed to the relatively high proportion of negative self-references. The task was clearly defined and the subject knew immediately if he had made an error or not and often responded verbally to an error. There were also 20 opportunities to get feedback on this task. The MEPS tasks, however, were less clearly defined as to what was a "correct or incorrect" response, and there was no feedback given to the subject regarding the quality of his response during the experimental procedures. Also subjects only had to respond to three stimulus situations (story stems) in each of these tasks compared to the 20 stimulus situations in the anagrams. Therefore, while there may have been an occasional statement such as "I don't think I got it right," there may have been fewer clear-cut promptings in which to make this type of comment in the medium and high involvement tasks. As an additional note, in the medium and high involvement tasks, subjects in the depressed-public group had a higher proportion of negative self-statements than any of the other groups. While not statistically significant, it does demonstrate a trend in the predicted direction (i.e., the depressed-public group performing more poorly on the tasks requiring higher levels of interpersonal involvement).

A very interesting result with the cognitive measure of Solutions which lends support to the concept of an interpersonal basis for psychopathology involves the finding that all subjects had significantly more difficulty dealing with the tasks in the high interpersonal involvement condition than in any of the others. Although this is not a definitive finding specific to depression since the two groups being compared are depressed psychiatric patients and nondepressed psychiatric patients, it is still consistent with Coyne's (1976b) proposal that depression, like other psychopathological disorders, has an interactional basis. Similarly, the fact that all subjects did more poorly on Solutions in the public setting than in the private setting also supports the interactional basis for psychopathology including depression. Further, inspection of Table 1 demonstrates that although failing to reach statistical significance, the prediction that the depressed subjects would obtain their poorest scores in the PU-HI condition was supported. In fact, this was the poorest performance of any condition in any task thus adding emphasis to the position that depression is especially sensitive to degree of interpersonal involvement. These are promising areas for future research and will be discussed later.

Possibly the most important finding was that the subjects in the depressed-public group performed more

poorly on Solutions than did any of the other three groups (i.e., depressed-private, nondepressed-public, nondepressed-private). This lends support to the position of Sacco and Hokanson (1978) that, in contrast to the learned helplessness view of depression, a more instrumental conceptualization of the disorder with an emphasis on social interaction may be more appropriate. The learned helplessness approach would predict no differences between performances by depressed subjects regardless of whether they were in a public or private setting. Again, however the work of Ferster (1974), Lewinsohn (1974), and Coyne (1976b) indicates that depressive behaviors may be interpreted as active attempts to bring about desired social outcomes such as the escape or avoidance of interpersonal threat or the gaining of sympathy and attention from others, and the present results fit nicely into this framework.

In view of this strong correlation between depression and anxiety scores, it is not really surprising that there were no significant differences in their relative abilities to predict the subjects' performance. However, the finding that anxiety scores were the strongest non-linear predictor of performance on the low involvement solutions task (anagrams) partially supports the second hypothesis. The curve in Figure 5 depicts clearly the curvilinear (inverted U-shaped) relationship between anxiety and performance on the low involvement task, while depression had no significant relationship to performance on this task. This has

very strong implications for research in the area of depression since an extensive amount of the work which has been done (especially in the learned helplessness literature) employed anagrams and other relatively impersonal tasks in evaluating performance. This strongly suggests that possibly these studies have been assessing the effects of anxiety rather than depression. There have been several studies (Gotlib & Asarnow, 1979; Logsdon & Levenson, 1975; Roth & Kubal, 1975) which discovered an "unexpected" facilitation effect of anxiety on the performance of a relatively impersonal task. Further, these studies dealt with subjects in the mild to moderate range of depression. Although the present study dealt with a wider range of severity of disorders, the results are consistent with these findings at the lower levels of severity, but also reveal that as the disorders of the subjects increase in severity the anxiety becomes debilitating on this type of task. The implications of these results on sampling procedures and interpretation of findings will be addressed further in the section on future research.

The second hypothesis was not entirely supported, however, because the depression scores were not significantly more predictive of performance in the more interpersonal tasks (medium and high involvement) in the public setting. Again, this is quite possibly the result of the very high linear relationship between depression

and anxiety measures. While these studies do not alter the questionable validity of using low interpersonal involvement tasks to assess depressive deficits, it fails to clearly support the proposal that the more interpersonal tasks are tapping the deficits specific to depression. However, since some of the results discussed earlier to lend themselves to such an interpretation the issue is still very much alive and is an area prime for further investigation.

Briefly, the present findings support the position that many of the symptoms of depression are most accurately conceptualized as an instrumental set of behaviors which are displayed primarily when in the presence of other people. This does not necessarily imply that when a person is alone they do not experience depression, however, because as Sullivan (1944) has proposed, even when a person is alone he or she may be addressing social stimuli imaginally and therefore may experience to a lesser extent the feelings associated with those stimuli. However, the depressive symptoms are more pronounced when the actual social stimulation of other people is involved. This is inconsistent with the learned helplessness model which would predict similar behavior from depressed individuals whether others were present or not. Another important result suggests that many of the tasks used in the bulk of research in learned helplessness with humans require relatively little interpersonal involvement and may be more responsive to changes in state anxiety levels than to depression.



These results have important therapeutic implications. For example, if the learned helplessness model had been supported it would have implied that an individual approach to therapy would be appropriate. The emphasis would be on identifying and restructuring maladaptive, distorted cognitions and modifying the patient's expectations regarding lack of control over environmental situations. However, the fact that the more instrumental conceptualization of depression was supported suggests that a more contextual approach to therapy would be more appropriate wherein the therapist works with the individual in social units such as marriages, families, or groups. In this way, the instrumental nature of the patient's responses and how these responses to everyone involved and how these responses are maintained. The therapist can then take steps to extinguish these symptomatic responses and help the patient develop healthier, more adaptive ones which are appropriately rewarded and maintained by those who are significant to the patient.

#### Limitations

There are several ways that the present study could have been strengthened which will now be noted. The first involves the use of males as subjects while excluding females. A second improvement would be to add another experimental group of subjects who are not psychiatric patients. Another weakness of the present study was the relatively poor comparability of the feedback across tasks.

Finally, a wider array of tasks may have been employed to more fully assess the effects of the demand for interpersonal involvement on the subjects' performance. These limitations will be addressed further within the context of future research.

### Future Research

It is interesting to note that among all of the research reviewed in this study, none has directly addressed the issue of sex differences as a factor in the differential response of subjects who are clinically depressed or who have experienced an induced helplessness situation. They have either used exclusively males or females (as the present study did) or used both in equal proportions in order to avoid including gender as a major factor. This issue appears to be greatly overdue for examination, and a very useful and appropriate study would be to evaluate whether or not there is a differential response to depression or helplessness as a result of the person's gender.

The next logical extension of the present research effort would be to add another experimental group of subjects who are not psychiatric patients but who have similar demographic backgrounds to those subjects in the other two groups. This would most probably increase the likelihood of obtaining statistically significant results if they do indeed exist. This would avoid the necessity

of basing important conclusions on some aspects of the present data which are marginally significant statistically.

Another area needing improvement involves designing the tasks in such a way that they are more comparable in terms of feedback about task performance. This same caveat would be in order for any behavioral measure employed to detect depressive deficits. Suggestions for means of accomplishing this include equating in some manner the number of problem situations the subjects attempt to solve or possibly manipulating or delaying the feedback on each problem until the end of the session. This may give them less to react to, but the behavior they do display may have more significance if it is generated on their own initiative rather than as a reflexive response to a concrete stimulus.

An addition to the present design which may prove enlightening would be to use a wider array of tasks which gradually become more interpersonal in nature with the final one placing more intense interpersonal demands on the subjects than were done in this study. This may more clearly display the role of the interpersonal nature of the task in producing performance deficits in depressed subjects. It may also allow a more thorough evaluation of the relative contribution of depression and anxiety in producing deficits on a particular class of tasks (e.g., impersonal vs. interpersonal).

A final suggestion for those interested in researching this field is to operationalize very clearly the severity of the depression in the subject population you are examining. Further, one should be aware that faulty sampling practices can lead to contradictory results by assuming a linear relationship between the independent and dependent variables. This is what appears to have been happening in much of the learned helplessness research with state anxiety being a moderator variable on many of the tasks. Since much of the early work with human subjects involved analogue studies with students, they were probably sampling from the lower part of the distribution of the severity of the disorder and within the context of the present findings their results may have been somewhat misleading. In order to avoid this type of problem it is recommended that subjects be selected from a sufficiently wide range of severity of the depressive disorder to accurately describe the shape of the distribution. This will entail the use of clinically depressed psychiatric patients in any study which desires to be truly representative in its study of the disorder.

## Appendix A

## The Means-Ends Problem-Solving Procedure (MEPS)

1. You were listening to the people speak at a meeting about how to make things better in your neighborhood. You wanted to say something important and have a chance to be a leader too. The story ends with you being elected leader and presenting a speech. You begin the story at the meeting where you wanted to have a chance to be a leader.
2. You loved your girlfriend very much, but you had many arguments. One day she left you. You wanted things to be better. The story ends with everything fine between you and your girlfriend. You begin the story with your girlfriend leaving you after an argument.
3. You had just moved in that day and didn't know anyone. You wanted to have friends in the neighborhood. The story ends with you having many good friends and feeling at home in the neighborhood. You begin the story with you in your room immediately after arriving in the neighborhood.
4. One day you saw a beautiful girl you had never seen before while eating in a restaurant. You were immediately attracted to her. The story ends when you get married. You begin when you first noticed the girl in the restaurant.
5. You noticed that your friends seemed to be avoiding you. You wanted to have friends and be liked. The story ends when your friends like you again. You begin where you

first noticed your friends avoiding you.

6. You are having trouble getting along with the foreman on your job. You are very unhappy about this. The story ends with your foreman liking you. You begin the story where you aren't getting along with him.

## Appendix B

## Anagrams and Solutions

1. WEART - WATER
2. TIRNA - TRAIN
3. CGOHU - COUGH
4. VAILT - VITAL
5. SAURG - SUGAR
6. CIHRA - CHAIR
7. HSOEU - HOUSE
8. PEORW - POWER
9. LOARB - LABOR
10. PIAOT - PATIO
11. BOANC - BACON
12. CMLBI - CLIMB
13. TGAON - TANGO
14. DNRKI - DRINK
15. NLOEB - NOBLE
16. JNATU - JAUNT
17. PTAYR - PARTY
18. TARDI - TRIAD
19. PIACN - PANIC
20. FRLTI - FLIRT

Appendix C  
Perceived Self Efficacy Scale

Please rate the degree of confidence you have that you can perform the activities necessary to succeed on the task just described to you. Circle the number at the point on the line which is closest to the level of confidence you feel.

1	2	3	4	5	6	7	8	9	10
					<hr/>				
not at all					very				
confident					confident				



Appendix D  
Perceived Self Efficacy Scale

Please rate the degree of confidence you have that you can perform the activities necessary to succeed in the story situations you have just described. Circle the number at the point on the line which is closest to the level of confidence you feel.

1	2	3	4	5	6	7	8	9	10
					<hr/>				
not at all					very				
confident					confident				

## Appendix E

## Experimenter's "Personal Experiences"

Story Stem 1: I unexpectedly saw my fiancée in a bar with a man I did not know and I felt jealous and angry. The story ends with my feeling foolish and we all become friends.

Story 1: As I was walking home from work one day I happened to look in the window of a restaurant and bar that I often enjoy stopping at. As I looked into the window I unexpectedly saw my fiancée having a drink with a man I did not know, and I began to feel jealous and angry. I watched them for a couple of minutes and they were laughing and enjoying themselves and I got even more angry as I thought about her running around on me. I walked into the bar thinking that it was all over between us and planning to tell them both what I thought of them. I walked up to their table and said, "Hello," and they looked surprised. I asked if she had a new fiancée and I expected her to feel ashamed and apologetic. Instead she started laughing and so did the man. That confused me and I asked what they were laughing at. My fiancée explained that this was her cousin whom she hadn't seen in five years and she had just been telling him how considerate, nice, and open-minded I was. Then I just walked up and acted in a jealous and suspicious way, just the opposite of the way she described me. I

felt very foolish and embarrassed and apologized for not trusting her. Then I joined them and we all became friends.

Story Stem 2: I wanted to ask my boss for a raise, but I was afraid he would be angry if I did. The story ends with my getting a raise and feeling very confident and good about myself.

Story 2: I had been working for this company for quite a while and I had been doing a good job and felt I deserved a raise. My boss was known for his quick temper though and I was afraid he would get angry and maybe even fire me. I thought about it for a while and decided that I wouldn't respect myself if I didn't at least try, so I went into his office. I was really nervous, but I told him that I had been doing a good job and felt that I deserved a raise. He didn't say anything at first and I got even more nervous, but I just waited. He finally said that he agreed with me and gave me the amount of salary increase I had asked for. I felt proud of myself for doing something which was so difficult for me and I also changed my opinion of my boss, feeling more comfortable with him and seeing him as being more reasonable and human.

Story Stem 3: I had a rather lonely neighbor who would visit me all the time and stay for hours. I didn't

like the situation, but I didn't want to hurt his feelings. The story ends with the visitation situation being more satisfactory and our still being friends.

Story 3: I had a neighbor who lived alone and had few friends. He used to "drop by" all the time without letting me know and would stay for hours. I liked the guy but I felt imposed upon by some of these visits. Because he was lonely I felt too guilty to tell him how I felt though. This went on for quite a while until I began to really feel angry. I thought about it and decided that if I didn't do something about it my anger would show through and hurt his feelings anyway. So the next time he came over I told him that I liked him, but I preferred him calling me before coming over because sometimes I have other plans or just feel like being alone. He apologized for the way he had been visiting so much and I told him that I would enjoy seeing him if he would call ahead. He said he appreciated my letting him know how I felt about things. He calls me now before visiting and I feel free to ask him over or not to. We are actually closer friends now than we were before.

## INFORMATION ABOUT:

Assessment of Problem-Solving Skills  
In Hospitalized Persons with Emotional Difficulties

## Audie Murphy Veterans' Administration Hospital

You are invited to participate in a study of problem-solving abilities in persons with various types of emotional problems. We hope to learn the kinds of difficulties they may have and the role of other people in their difficulties. You were selected as a possible participant in this study because you are a patient at this hospital with certain age, education, and background characteristics necessary in order to compare the results of this study with other research done in this area.

If you decide to participate, Steven Logsdon or his associate, Dr. William McKay, will initially ask you to fill out some brief questionnaires to provide information on your current emotional situation. You will then be randomly assigned to one of two groups and requested to participate in three brief problem-solving tasks. One task will involve solving anagrams (words with letters in mixed up order) and the other two tasks will involve your being given the beginning and ending of some stories and asking you to make up and tell the middle part of the story. The entire procedure should take from 60 to 90 minutes of your time. Your problem-solving tasks will be tape recorded, but none of these tapes will be identifiable as your personally and all results will remain strictly confidential. After you have completed the tasks the entire study will be completely explained to you and any questions you might have will be answered.

Your decision whether or not to participate will not prejudice your future relations with the Audie Murphy Veterans' Administration Hospital. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time without prejudice.

If you have any questions, we expect you to ask us. If you have any additional questions later, Steven Logsdon (telephone: 696-9660 ext. 6273) will be happy to answer them.

You will be given a copy of this document to keep.

\_\_\_\_\_  
Signature of Subject

\_\_\_\_\_  
Protocol Number

## Appendix G

The pilot work to assess the accuracy of the ordering of the experimental tasks from Low through Medium to High Interpersonal Involvement levels consisted of consulting the opinions of the Psychology Service staff at Audie Murphy Veterans' Administration Hospital in San Antonio, Texas, at the end of a regularly scheduled staff meeting. They were asked to rate the degree of interpersonal involvement demanded of the subject (i.e., a rating of 1 indicated the highest amount of interpersonal involvement was demanded, 2 indicated that the task demanded somewhat less involvement, and 3 indicated the least demand). The tasks were presented in the order Medium, Low, High, and the descriptions they were given of the experimental tasks appear below:

- \_\_\_\_\_ Having the subject complete stories of interpersonal situations in which he is given the beginning and ending of these stories.
- \_\_\_\_\_ Having the subject solve an anagrams task (i.e., forming words from letters in scrambled order).
- \_\_\_\_\_ Having the subject alternate with the experimenter with each one completing stories of interpersonal situations similar to ones they may have experienced in which they are given the beginning and ending of these stories

Twelve of the fifteen respondents (80%) agreed with the experimenter's proposed ratings as to Low, Medium, and High

demands for Interpersonal Involvement. The three psychologists who differed from the experimenter's ratings all agreed that the anagram task demanded the least amount of interpersonal involvement. They also felt that the remaining two tasks were comparable in terms of demand for interpersonal involvement and either could have been rated as a 1 or 2, but both were clearly more interpersonal in nature than the anagram task.

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