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COGNITIVE FACTORS IN DEPRESSION

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ABSTRACT

COGNITIVE FACTORS IN DEPRESSION

By

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This study investigates a theory of depression, derived from the work of Aaron Beck (1976) and Eric Klinger (1977), which postulates that a primary commitment to the incentive of avoiding loss leads (through the processes of attention, recall, and thought) to the cognitive distortions which in turn produce and maintain depression.

A total of 124 undergraduate volunteers completed a series of paper-and-pencil measures in a group session. In later individual sessions, each subject was asked to imagine a complex everyday situation. They completed Depression Adjective Checklists (Lubin, 1967) before and after imagining the scene, and then their cognitive responses to the image were assessed through a detailed structured interview.

This study found that commitment to the incentive of avoiding loss in general (as measured by a self-report thought survey developed for this study) was correlated with the signs and symptoms of depression (as measured by the Beck Depression Inventory). In addition, people with a high commitment to the avoidance of loss were found to be more likely to report having irrational-depressed thoughts in

response to the imagined scene, and the presence of irrational-depressed thoughts was found to be related to a subsequent increase in depressed mood (as measured by the Depression Adjective Check-lists). The attempt to delineate the specific processes of attention, recall, and thought which were hypothesized to lead to the irrational-depressed thoughts was not successful.

The findings of this study lend support to Beck's (1976) cognitive theory of depression, since in a relatively naturalistic situation, subjects who interpreted ambiguous cues in a way that led to irrational-depressed thoughts did become more depressed in mood. The results also suggest a relationship between commitment to the incentive of avoiding losses in general and depression, as well as a relationship between commitment to avoiding loss and the presence of irrational-depressed thoughts in response to ambiguous cues. Further research is needed to specify precisely how a primary commitment to the incentive of avoiding loss might contribute to the development of irrational-depressed thoughts and, hence, to the maintenance of depression.

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STATEMENT OF THE PROBLEM

The recent increase in popularity of cognitive perspectives in psychology has led to an upsurge of interest in the cognitive factors involved in psychopathology, especially in the area of depression. Three contemporary theories of depression which acknowledge the importance of cognitions in the development and maintenance of depression are the cognitive, life events, and learned helplessness theories of depression. Research on each of these theories has led to some findings which are compatible with all three theories and other findings which point out discrepancies between the theories.

Beck's cognitive theory of depression (1976) posits that specific, depressive cognitive distortions lead to depression and contribute to the self-perpetuating nature of depression. Recent research stemming from the theory of learned helplessness, however, has shown that in some situations nondepressed people actually distort reality significantly more than depressed people (Alloy & Abramson, 1979) in a manner that seems to help them to enhance their self-esteem. These findings challenge Back's theory of cognitive distortions as the cause of depression and suggest that, on the contrary, people may be depressed because they do not distort reality sufficiently in an optimistic manner.

This paper will combine elements of Beck's (1976) theory of depressive cognitive distortion, Klinger's (1977) incentive theory,

and the concept of loss as related to depression in order to form a new theory of overcommitment to the primary incentive of avoiding loss in general as the cause of the cognitive distortions which lead to depression. This theory may prove to be comprehensive enough to elucidate the processes involved in varying levels of depression and to integrate the findings both for and against cognitive distortion in depression, as well as some of the relevant findings from the literature on the relationship between life events and depression.

RELATED LITERATURE

Depression

The clinical phenomenon known today as depression has been recognized for at least 3,000 years. The depressions of Job and Saul are detailed in the Old Testament, and in the fourth century B.C., Hippocrates made the first clinical description of "melancholia" (Friedman & Katz, 1974). Depression's long history has led Beck (1967) to conclude that "there are few psychiatric syndromes whose clinical descriptions are so constant through successive eras of history" (p. 5).

The National Institute of Mental Health (1973) reports that the clinical condition of depression is on the increase and is beginning to rival schizophrenia as the nation's number one mental health problem. They estimate that 10% of the general population will have a significant depressive episode at some time in their lives and that more than 80% of reported suicides can be traced to a precipitating depressive episode. Clearly a public health problem of this magnitude merits much attention from clinical scientists today.

In spite of its long history, most of the important issues concerning the definition, etiology, and treatment of depression remain unresolved. The term "depression" is often poorly defined, being used variously to describe normal reactions to life events, abnormal mood states, symptoms, symptom syndromes, and even a series of disease

processes (Lewinsohn, 1974). There is still much heated debate over the distinctions between neurotic and psychotic depression, endogenous and reactive depression, retarded and agitated depression, unipolar and bipolar depression, and so on. Although hundreds of investigations have been conducted, the conflicting evidence has thus far done little to clarify these distinctions. An extensive review of the literature related to these controversies is not within the scope of this paper but may be found in volumes by Beck (1967) and Becker (1974).

The search for the causes of depression has also not yet been conclusive. According to Beck (1974a), "At one time, this strange affliction was ascribed to demons that allegedly took possession of the victim. Theories advanced since then have not yet provided a more durable solution to the problem of depression" (p. 4). Theories of a physiological cause of depression date back to the belief of ancient Greeks that depression was a result of excessive black bile in the body fluids (Lewinsohn, 1974) and can be found in present times in advanced biochemical and physiological research. Pharmacological treatments of depression have had a parallel development from the ancient story of Penelope taking a drug to dull her grief in Homer's Odyssey to the modern use of such antidepressant drugs as tricyclics and monoamine oxidase inhibitors (Beck, 1967). Electroconvulsive therapy is also used by some proponents of the theory that depression has a physiological etiology.

Other theorists propose that internal psychological mechanisms are responsible for depression. Psychoanalytic theorists suggest that depression follows the loss of a real or fantasized love object

with whom the person had identified so narcissistically that they could not differentiate the external loss from a loss within their own ego. This is experienced as a loss of self-esteem which, along with internalized hostility, results in depression (Freud, 1917). The corresponding treatment would be psychoanalysis, to help the person work through these unconscious dynamics. There have been many other psychological theories with many corresponding therapeutic interventions which are not directly related to the focus of this research; extensive reviews of these approaches appear in volumes by Beck (1967), Becker (1974), and Friedman and Katz (1974).

The lack of consensus among researchers about the definition and etiology of depression has led to a corresponding lack of agreement about appropriate methods for assessing depression. Self-report depression scales are the assessment methods which have thus far received the most empirical support. Many self-administered depression scales have been described in the literature, but few of these scales assess similar symptoms of depression, and most of these measures have had limited use and are supported by relatively little psychometric data (Rehm, 1976). The most widely used and extensively studied self-report measure of depression is the Beck Depression Inventory (BDI) by Beck, Ward, Mendelson, Mock, and Erbaugh (1961). Some interviewer rating scales have also been developed, but they rely on self-report almost as much as the self-administered depression scales do, except that with these measures an interviewer is used to make the final rating. The direct assessment of overt depressive

behavior, both verbal and motor, has only recently been attempted, and much more research will be needed before the reliability and validity of such measures will be fully established. At present, however, there is no generally accepted or well-standardized means for assessing depression.

In his classic work on depression, Beck (1967) maintains that the only thing investigators of depression have consistently agreed upon is its symptomatology. As long as so many key issues remain unresolved, therefore, the most useful definitions of depression seem to involve classifications of the clinical manifestations of depression. For example, Beck (1974b) classifies the signs and symptoms of depression into a symdrome of four dimensions:

> Emotional: Sadness or apathy; crying spells, dislike; loss of gratification; loss of feelings of affection; loss of sense of humor.
>
> Cognitive: Negative self-concept; negative expectations; exaggerated view of problems; attribution of blame to self.
>
> Motivational: Increased dependency; loss of motivation; avoidance, indecisiveness; suicidal wishes.
>
> Physical and Vegetative: Loss of appetite; sleep disturbance; fatigability; loss of sexual interest.

The term "depression" in this paper will refer to this syndrome of four dimensions, unless otherwise specified.

A great deal of research has been generated in recent years in an attempt to better understand the phenomenon of depression. This paper will summarize and attempt to integrate some of the research findings from three different contemporary approaches to depression: the cognitive, life events, and learned helplessness theories of depression.

Cognitive Theory of Depression

From ancient times man has been fascinated by the importance of thoughts, or cognitions. Recent cognitive theorists are fond of quoting the ancient philosophers on the subject of cognitions. For example, Buddha, before 480 A.D., said, "All that we are is a result of our thoughts, it is founded on our thoughts; made up of our thoughts." In the first century A.D., the stoic philosopher Epictetus said, "Men are disturbed not by things, but by the views which they take of them" (both cited in Ullmann & Krasner, 1975, p. 238). The current upsurge of interest in cognitive variables, however, seems to be a reaction against the relative neglect of cognitive variables in early behaviorism. Eager to break away from psychodynamic traditions, early behaviorists concentrated on observable behaviors and tended to reject data and concepts derived from man's internal experience. Mahoney (1974) calls this era of almost religious avoidance of inferred variables "the Cognitive Inquisition" (p. 3). Since Homme's (1965) classic paper on "coverants, the operants of the mind" and Bandura's (1969) summary of the literature pointing toward cognitive-symbolic mediation, the study of cognitive phenomena has become accepted as a scientifically legitimate enterprise, and research in this area has mushroomed.

The cognitive theory of psychopathology which has the longest history and has received the most popular attention in recent years is Albert Ellis' (1962) rational-emotive theory. Ellis' theory is based on the premise that much, if not all, emotional suffering is due to the irrational ways people construe the world and to the assumptions

they make. These assumptions can lead to self-defeating internal dialogues or self-statements that have a negative effect on emotions and behavior. According to Ellis (1958), "for all practical purposes, the sentences that human beings keep telling themselves are or become their thoughts and emotions" (p. 36). Ellis holds that certain core irrational ideas, which have been clinically observed, are at the root of most emotional disturbance.

In more recent years, Aaron Beck (1976) has formulated a comprehensive theory of psychopathology in which he views faulty or disordered thought processes as the primary cause of common psychological disorders. He states that although different people may conceptualize the same situation in different ways, a given individual tends to be somewhat consistent in response to similar types of situations over time. Beck hypothesizes that throughout development, people learn rules or formulas by which they attempt to make sense of the world, and he refers to these rules variously as "schemas," "basic assumptions," "underlying beliefs," and "ideational systems." According to Beck,

> these formulas determine how the individual organizes perceptions into cognitions, how he sets goals, how he evaluates and modifies his behavior, and how he understands or comes to terms with the events in his life. In essence, these basic assumptions form a personal matrix of meaning and value, the backdrop against which everyday events acquire relevance, importance and value (Beck, Rush, Shaw, & Emery, 1979, p. 244).

He presents the example that if a person has the underlying assumption that "Unless I do everything perfectly, I'm a failure," all experiences may be interpreted in terms of competency and adequacy, even when the situation is in fact unrelated to whether or not that

person is personally competent. While these belief systems are based on previous experience and typically are accurate representations of reality leading to appropriate emotions and behaviors, Beck argues that in psychopathology, dysfunctional and idiosyncratic belief systems can develop through experience or be learned from the attitudes and opinions of parents and peers. Such unrealistic belief systems can lead to maladaptive emotions and behaviors. He posits that the particular form of the psychological disorder is related to the specific content of the predominant, persevering belief systems.

Beck's (1976) cognitive theory of psychopathology has been most clearly delineated and studied with regard to the phenomenon of depression. Although depression has most traditionally been considered an affective disorder which happens to have cognitive consequences, Beck classifies depression as primarily a thought disorder. The depressed persons show specific cognitive distortions which Beck terms "the cognitive triad." This triad includes a negative view of the self, of the outside world, and of the future. Depressed people see themselves as defective and inadequate, undesirable and worthless. They see the world as overly demanding, and their interactions with their environment are seen as depriving and defeating. They fully expect these failures and rejections to continue indefinitely into the future. As a result of these negative cognitive schemas, these people come to feel depressed and withdraw from others, becoming passive, self-critical, and guilty.

Although initially caused by faulty thought processes, Beck maintains that once the depressive cycle has begun there may be an

interaction between thoughts and feelings which facilitates a downward spiraling and progressive intensification of the depression. As people observe their affective and behavioral reactions to their depressive thoughts, they may become more self-critical leading to further sadness and so on. Beck (1967) sums this up by saying, "the more negatively the patient thinks, the worse he feels; the worse he feels, the more negatively he thinks" (p. 289).

In the milder stages of depression, an individual may be able to regard his or her negative thoughts somewhat objectively and perhaps even modify them. As depression deepens, however, the depressive schemas not only displace more appropriate schemas but they become so dominant that they also disrupt the processes involved in self-objectivity and reality-testing. Severely depressed people may have difficulty even considering the possibility that their ideas are erroneous. The depressive schemas may dominate the cognitive processes such that the person can actually not recall any events that are inconsistent with the schemas.

Cognitive distortion, or systematic errors in thinking, help depressives to maintain a belief in the negative cognitive triad even in the face of contradictory evidence. Beck (1976) outlines some of the most common errors or distortions involved in maintaining depression. Arbitrary inference is the process of drawing a conclusion when the factual evidence is lacking or contrary to the conclusion. Such misconceptions are especially likely to occur when the cues are ambiguous, as is often the case in interpersonal relationships. For example, a person who hears his or her name mentioned in a group of

people may automatically think "they are saying bad things about me." Intrinsic to this type of thinking is the failure to consider more plausible and probable alternative explanations. Selective abstraction is the process of focusing on a detail out of its context while ignoring other features of the situation which may actually be equally or more salient. Thus, a friend leaving a party early may be interpreted as personal rejection without considering their legitimate reason for needing to leave. Overgeneralization is the process of making an unjustified general conclusion on the basis of a single incident. Thus, one incidence of failure can be taken as a sign of total incompetence and worthlessness, and one mistake can lead to the thought "I never do anything right." Magnification (termed "catastrophizing" by Ellis, 1962) is the process of exaggerating the meaning or significance of an event. This type of error in evaluation is demonstrated by the tendency to make extreme judgments or to anticipate intensely negative outcomes to everything. Thus, one critical remark from a professor could lead to thoughts of "I'll be kicked out of school and never be able to get a job." The parallel process of minimization occurs when an individual grossly underestimates his or her own performance, achievement, or ability. Even a success could be followed by thoughts like "That was just luck and didn't matter anyway. It'll never happen again." Personalization is the process of relating external events to oneself when there is no basis for making such a connection. For example, a student hearing that another student has won a prize may think "I must be dumb or I would have won the prize." Finally, absolutistic, dichotomous thinking (also called

"bipolar thinking") is the tendency to make overly simplified and rigid judgments of events as either good or bad, right or wrong, black or white. Beck cites an example of a basketball player who thought "I'm a failure" if he scored less than eight points in a game and thought "I'm a great player" if he scored more than eight points.

The specific cognitions produced by idiosyncratic schemas and the processes of cognitive distortion are termed "automatic thoughts" by Beck and are similar to what Ellis (1962) calls "self-statements" or "things you tell yourself." These are the thoughts that intervene between an event and one's emotional reaction to the event, and range from thoughts like "I did great!" to "I'm ugly and inept." When these thoughts are a distorted appraisal of that event based on a maladaptive cognitive schema, the affect will tend to be inappropriate or extreme. These "automatic thoughts" seem relatively autonomous and involuntary in that people make no effort to initiate them and they can be difficult to "turn off." These thoughts seem plausible to the person at the time, even though they may seem far-fetched to other people or even to the same person on another occasion.

Although Beck's cognitive theory of depression is largely derived from clinical data, many elements also have been substantiated by empirical studies. Much research has been generated in recent years exploring Beck's cognitive theory of depression, and a brief summary of some of that research will be presented here.

The substantial body of evidence that symbolic events play a significant role in behavioral disorders (as reviewed in Mahoney, 1974) provides indirect support for the cognitive theory of

psychopathology. Velten (1968) was one of the early researchers to test the hypothesis that the interpretations people place on events determine their affective responses to the events. He had students read either elated, depressed, or neutral self-statements both silently and aloud. For example, one elated statement was "This is great--I really do feel good--I am elated about things," one depressed statement was "I have too many bad things in my life," and one neutral statement was "Utah is the Beehive State." After reading these statements, the subjects in the three different groups showed significant differences on four behavioral measures (writing speed, decision time, reaction time on a word-association task, and distance approximation) and on a mood checklist. Velten concludes that his results support the claims of Ellis, and he even suggests the use of statement-reading as a type of therapy.

Later studies have gone beyond Velten's study to consider the influence of cognitive mediation on behaviors that are thought to specifically reflect the state of depression (Hale & Strickland, 1976; Strickland, Hale, & Anderson, 1975). They found that subjects who read depression self-statements reported significantly more depression, anxiety, and hostility on adjective checklists than subjects who read elation self-statements. Also, subjects who read depression statements were less expansive on a graphic constriction-expansion measure, reported a preference for fewer social and active activities, wrote more slowly, and did more poorly on a digit symbol task than those who read elation statements. These results seem to provide some implicit support for a cognitive mediation theory of

depression, since the response of the subjects in the depression condition could be seen as similar to the withdrawal and psychomotor retardation reported by clinically depressed people.

The development of Beck's cognitive theory of depression began with studies of the manifest content of patients' dreams, in which depressed psychiatric patients reported having a higher proportion of dreams with negative outcomes (termed "masochism") than did a matched group of nondepressed psychiatric patients (Beck & Hurvich, 1959; Beck & Ward, 1961). The typical dreams of depressed patients portrayed the dreamer as a "loser," suffering some type of deprivation. In an analysis of the verbatim reports of 81 depressed and nondepressed patients in psychotherapy (Beck, 1963), a preponderance of the following verbal themes distinguished the depressed from nondepressed patients: low self-regard, ideas of deprivation, self-criticism and self-blame, overwhelming problems and duties, self-commands and injunctions, and escapist and suicidal wishes. These depressive cognitions also seemed to be automatic, involuntary, plausible, and persevering as described by the patients.

A series of correlational studies found significant relationships between the depth of depression (as determined by an early version of the BDI) and self-reported pessimism and negative self-evaluation in psychiatric patients (Beck, 1967). Also, high correlations between measures of the negative view of the future and the negative view of the self support the concept of the "cognitive triad." When depressed outpatients (categorized by the BDI and by psychiatrist ratings) were allowed to succeed on a card-sorting task, they did indeed increase

their estimates of the probability of future success and improved their performance on a second card-sorting task (Loeb, Beck, & Diggory, 1971). Objectively, the depressed patients performed at least as well as nondepressed patients on both these tasks.

A study by Weintraub, Segal, and Beck (1974) substantiates the relationship between depressed mood and negative cognitive content in normal males. A group of 30 student volunteers completed the Depression Adjective Checklist (Lubin, 1967) and a story-completion task at two-week intervals over a two-month period. As hypothesized, depression as measured by an adjective checklist was closely related to story-completion themes of the expectation of discomfort and failure and themes of negative perceptions of interpersonal relationships and the self. In addition, the negative cognitions were more stable and enduring than the negative affect, suggesting that the cognitive component is strongly activated in depressed mood and may even trigger it.

In a study using a social cognition model of the self, Kuiper, Derry, and MacDonald (Note 1) found evidence that depressives use a negative self-schema for the processing of personal data. Subjects were asked to rate depressed and nondepressed personal adjectives for structural attributes (is the word made up of small letters?), semantic attributes (does this word mean the same as another given word?), and self-referent attributes (does this word describe you?). During an incidental recall period, the subjects were asked to recall as many of the adjectives as possible. As predicted, adjective recall was greater overall for the Self-referent rating task, relative to the Structural and Semantic tasks. Clinical depressives (classed according

to the BDI, the Hamilton Rating Scale for Depression, and a primary psychiatric diagnosis of depression) showed significantly enhanced recall only for self-referenced adjectives with depressive content, while normals and nondepressed psychiatric controls showed superior recall only for self-referenced adjectives with nondepressed content. The authors concluded that although the depressives were no less efficient than normals at processing personal information, depressives do seem to evidence a more negative self-schema than do normals and psychiatric controls.

Studies of depression as related to the endorsement of dysfunctional attitudes or irrational beliefs have also lent some support to Beck's theory of depression. Using paper-and-pencil measures based on either Ellis' (1962) concept of irrational ideas or Beck's (1976) concept of dysfunctional attitudes, researchers have found significant positive relationships between the endorsement of maladaptive attitudes and self-reported depression, among college students (LaPointe & Crandell, 1980; Nelson, 1977; Weissman, Note 2) as well as in clinically depressed outpatients (Roper, Note 3). Weissman (Note 2) also reported that the depressogenic attitudes she measured seemed to be more persistent over time than was self-reported depressed affect.

Questionnaires designed to assess cognitive distortion in depression have also been found to successfully discriminate between groups of depressives, normals, and psychiatric controls (Krantz & Hammen, 1979; Watkins & Rush, Note 4). From test-retest data, Krantz and Hammen (1979) also found that students who had high scores on measures of both depression and cognitive distortion had the highest depression

scores when tested eight weeks after the initial testing. These results support Beck's theory of a characteristic cognitive bias in depression.

Although much research has been generated in recent years exploring Beck's cognitive theory of depression, and a number of studies show relationships between depression and negative cognitive content, most of the research lends only indirect support for Beck's theories and the results are far from conclusive. The correlational nature of most of these studies fails to indicate whether the cognitive manifestations are primary or causal in depression, while the laboratory, analogue nature of many of these studies limits the generalizability of the results to even moderately severe clinical depressions.

Life Events Approach to Depression

Dohrenwend and Dohrenwend (1979) maintain that the most convincing evidence that stressful life events can produce psychopathology in previously normal people comes from studies of the effects of both natural disasters and the man-made disaster of war. Although most of these studies are far from methodologically sound, their combined evidence lends support to the notion that extremely stressful situations can induce psychological disturbances. For example, in his study of 2,630 soldiers who had "broken down" during combat in the Normandy campaign of World War II, Swank (1949) estimated that combat exhaustion occurred when about 65% of the soldiers' companions had become casualties. Swank stressed that these men had been highly selected

for health and ability to cope, and that although the men who were seen as most stable prior to combat remained in combat longer without breaking down, their prior stability did not prevent the eventual onset of combat exhaustion. The symptoms caused by exposure to such extreme stress have not been limited to those classified as traumatic war neurosis, combat fatigue, and combat exhaustion. In fact, it has been asserted that most of the many signs and symptoms seen in psychiatric patients in civilian settings have also been observed as reactions to combat (Kolb, 1973).

Major disasters, however, are relatively rare and most people live their lives without experiencing such situations of severe stress. Since psychopathology and somatic disturbances are prevalent even in peacetime populations free from major natural disasters, Dohrenwend and Dohrenwend (1979) conclude that if stressful situations play an important etiologic role in these disorders, the events involved must be more ordinary, frequent experiences in the lives of people in general. Events such as marriage, birth, and the death of loved ones may not be extraordinary in terms of being rare occurrences within a population, but they may well be extraordinary occurrences in the lives of the individuals experiencing them. Since most of these life events, taken alone, are less extreme than natural or man-made disasters, the Dohrenwends assume that life events must show a cumulative pattern in the lives of people if they are to have a stressful impact and severe consequences similar to major disasters. This is their rationale for studying the occurrence of a wide variety of life events and their

relationships to each other in exploration of the possible etiologic importance of life events in physical and psychological disorders.

Although numerous studies have investigated the role of stressful life events in relation to the onset of physical illness and psychopathology, most of these studies have not emerged out of any common theoretical framework (Hinkle, 1974; Holmes & Masuda, 1974; Paykel, 1979). In fact, quite separate bodies of research have dealt with stressful life events and there has been little integration of their results. Researchers also differ as to what they believe makes a life event stressful. Most life-events researchers seem to agree with the general idea that stressful life events include those involving change in the ongoing life activities of the individuals who experience them. Much disagreement, however, revolves around whether subjective ratings of events by individuals should be used in the research to measure the experienced stressfulness, or whether standard lists of events should be used (assuming that some events are objectively more stressful than others) to avoid confounding the relationship between stress and the psychopathology. Dowrenwend (Note 5) quotes some researchers as saying that just as "beauty is in the eye of the beholder" so "stressfulness is in the psyche of the perceiver"; yet she maintains that "just as there is beauty in the world out there so is there stressfulness" (p. 1).

In general, it seems that much more energy has been devoted to finding yet one other symptom that correlates with life events than has been devoted to the integration of findings and the development of a solid theoretical framework which encompasses the results. The

researchers who do theorize about the role of life events rarely agree with each other. Holmes and Masuda (1974), for example, imply that a sufficiently strong clustering of life events will have strong etiologic implications for health (both physical and psychiatric) that are relatively independent of other predisposing characteristics of the individual involved. They hypothesize that when life events accumulate to crisis proportions, the events will evoke "adaptive efforts by the human organism that are faulty in kind and duration, lower 'bodily resistance' and enhance the probability of disease occurrence" (p. 68). They view such a crisis as a necessary but not sufficient cause of illness, accounting in part for the time of the disease onset. In contrast, Hinkle (1974) sees the role of predisposing factors as primary, with stressful life events playing only a very secondary part.

Dohrenwend and Dohrenwend (1979) translate Selye's (1956) formulations of the stress response into social and psychological terms in order to form a model of the impact of stressful life events. The paradigm (Figure 1) consists of four main elements from Selye's work: (a) an antecedent stressor, (b) conditioning or mediating factors that increase or decrease the impact of the stressor, (c) the General Adaptation Syndrome of nonspecific physical and chemical changes indicating the state of stress in an organism over time, and (d) consequent adaptive or maladaptive responses. In social or psychological terms, they argue that stressors can range from extreme situations such as natural and man-made disasters to more ordinary stressful life events. Mediating factors can include both the internal and external

resources available to the person. Since it remains unclear whether there exists anything directly analogous to the General Adaptation Syndrome in social and psychological terms, the Dohrenwends have left out the term "general" in their paradigm, but do postulate the presence of social-psychological adaptation syndromes which will require further research to clarify. Finally, if the adaptation fails, they would expect the results to be maladaptive responses in the form of psychopathology. They conclude that the research on extremely stressful situations appears to be straightforward only because the stressors are so overwhelming that they override the mediating internal and external factors. The research on more common stressful life events, however, is much more complex due to the stronger intervening influence of mediating factors.

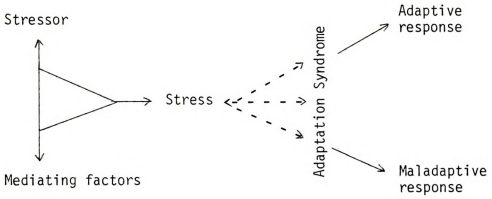

Figure 1.--Stress response.

One of the most popular topics for the debate over the relationship between illness and stressful life events has been depression. Paykel (1979) summarizes how proponents of one side of the controversy focus on the subjective distress that frequently in normal life follows unwanted life events and the common occurrence of similar life events at the onset of depression. Proponents of the other side of the controversy note that stressful life events are often quite common in everyday life, and that the genetic component in illness suggests that the life events observed are either coincidental or, at most, precipitants contributing only a trivial element to causation.

Relationships between stressful life events and depression have been found for several different populations, including psychiatric patients (Paykel, Myers, Dienelt, Klerman, Lindenthal, & Pepper, 1969; Uhlenhuth & Paykel, 1973), normal community populations (Ilfeld, 1977; Markush & Favero, 1974; Pearlin & Johnson, 1977), and for college students (Hammen, 1978). For example, in the Paykel et al. study (1969), psychiatric patients with a primary diagnosis of depression reported almost three times as many stressful life events in a six-month period as the randomly selected community control subjects. Although most of the events were reported more frequently by the depressives, the eight specific events which occurred significantly more often for depressives than for the general population were increased arguments with spouse, marital separation, changing to a new type of work or starting work, death of immediate family member, serious illness of family member, departure of family member from the home, serious personal physical illness, and substantial change in

work conditions. In general, undesirable events and exits (defined as departures from one's social field) discriminated between the two groups while desirable events and entrances into one's social field were equally distributed between the two groups. Later studies summarized by Paykel (1979) show that depressives report more stressful life events than schizophrenics, but fewer than suicide attempters, and that the number of stressful life events reported is related to the relapse of depression as well as to the onset of depression.

Although some relationship between stressful life events and depression has been demonstrated, this relationship is clearly not a simple one. Many individuals who experience life stresses do not develop depression or any other physical or psychological disorder. On the other hand, many relatively depressed persons show low levels of objective life stress as they are typically measured (Hammen, 1978). Although stressful life events may be important in the etiology of depression, they are clearly not the sole determinants of depression. In his review of psychological theories of depression, Blaney (1977) has raised the crucial question "What is it about certain life events that makes them depression inducing? And, under what circumstances do such events lead to depression, to anxiety, to a redoubling of efforts to overcome, to rage, or to physical illness?" (p. 220).

Several researchers have suggested that cognitions could play an important role as mediators between stressful events and depressive affect (Dohrenwend, 1977; Hammen, Krantz, & Cochran, Note 6; Wortman & Dintzer, 1978). In keeping with the cognitive model presented above, it seems possible that it is not the stressful events per se but the

ways in which the events are interpreted which may initiate and maintain depression. Hammen and her colleagues at UCLA have recently begun researching this aspect of the relationship between life events and depression. In an initial exploratory study, Hammen (1978) found an interaction between life-change scores and self-reported depression level in students, which suggests that depressed subjects with low life stress tend to cognitively distort their interpretations of events more than subjects who are depressed but have high life-stress scores. One possible explanation presented for this finding is that two separate types of students may have been identified as depressed: one type depressed due to recent stressful life events and one type depressed due to distorted interpretations of objectively innocuous events.

Later research in this area generally supports the theory that cognitions concerning life events play an important role in determining whether or not the life events lead to depression, but the results have also led the authors to conclude that more differentiated and elaborated models of the relationship between depression and cognition are needed. Hammen et al. (Note 6) found that, overall, relatively depressed and nondepressed students (categorized by the BDI) made different attributions about the causes of their own recent stresses, and the patterns of their attributions were predictive of depression nearly two months later. They also determined, however, that there was no single depressive pattern of cognitions and that the best predictors of depressed mood were complex combinations of cognitions. Gong-Guy and Hammen (1980) found that outpatients reporting

depression on the BDI (who, unlike the college-student sample mentioned above, had evidenced at least some internal attribution for problems by seeking therapy) reported that their one most upsetting recent life event had been caused by something about themselves rather than other people or the situation and had been intentionally planned. They also stated that this one event had been expected to occur and had been caused by something relatively unchanging which affected other areas of their life as well. There was, however, no significant difference in causal attributions between depressed and nondepressed subjects when all the stressful events measured were included in the comparison.

There are many methodological limitations to the use of life-events measures which emphasize recent, discrete, and acute events. Using predetermined weights to compute life-change scores does not allow for the considerations of various individual responses to specific events. Many serious psychological circumstances, such as chronic problems of poverty, failure, or dissatisfaction, may not show up on a list of life events but may markedly contribute to the life stress of an individual. Thus, it would be inappropriate to conclude that people who score low on a life-events scale are necessarily free of significant stressors. An excellent review by Rabkin and Streuning (1976) summarizes some of the methodological problems in the general life-events research which are equally applicable to studies of life events as related to depression. They conclude that "instead of trying repeatedly to answer the question whether life events play a precipitating role in illness, the next step in the

progressive development of this field entails examination of the circumstances under which such effects occur and do not occur" (p. 1017).

Learned Helplessness Theory of Depression

Martin Seligman (1974, 1975) has approached the issue of depression from a unique perspective: from his studies on the effects of uncontrollable aversive events upon infrahuman subjects he has derived what he calls the "learned helplessness" model of depression in humans. In his basic experimental paradigm, Seligman exposes his experimental group of dogs to uncontrollable and inescapable electric shock. Later, these dogs are placed in a shuttle box where escape and avoidance behaviors are now possible. Whereas all the naive control dogs learn to avoid the shock fairly quickly, two-thirds of the dogs in the experimental group simply do not learn to escape or avoid the shock even after repeated trials. They just lie down and passively accept the shock even when it could be avoided completely. The interference with adaptive responding which is produced by inescapable shock has been termed learned helplessness and is defined by two basic behaviors: (a) failure to initiate escape-avoidance responses and (b) difficulty learning that responding is effective even after a correct escape-avoidance is made (Seligman, 1974).

There seem to be many parallels between the behaviors that define learned helplessness and the symptoms of human depression. Both helpless animals and depressed people are characterized by their passivity. Whereas helpless animals experience difficulty learning that

their responses can have an effect on their situation, depressed people have such negative expectations of their own effectiveness that they even construe actions that have succeeded as having failed. Both learned helplessness and depression can dissipate in time, and both are often connected with weight loss, anorexia, social and sexual deficits, and norepinephrine activity. Finally, animals lie down and look helpless in the face of shock, while depressed people often actually describe themselves as helpless. The subjective attributes of depression are not inconsistent with learned helplessness, but they cannot be directly deduced from the theory since animals cannot tell us what they are thinking and feeling. There also are no clear infrahuman equivalents of suicide and sobbing, two behavioral manifestations of depression in humans. Finally, stomach ulcers occur more during uncontrollable than controllable shock in animals, but no data seem to correlate ulcers and depression in man. Thus, although there are strong similarities between the behaviors in learned helplessness and depression, the correlation is by no means a perfect one.

Seligman (1974) contends that depressing situations share the fact that the client has learned or believes that he cannot control those aspects of his life which are important to him. Seligman sees learning that outcomes are not controllable as resulting in the motivational, cognitive, and emotional deficits of depression. As research has accumulated on learned helplessness in human beings, investigators including Seligman himself have found the theoretical constructs derived from the animal-helplessness studies to be

inadequate in conceptualizing helplessness and depression in humans. Using a revision of attribution theory, Abramson, Seligman, and Teasdale (1978) have presented a reformulation of the learned helplessness model. They summarize this reformulation saying,

> Once people perceive noncontingency, they attribute their helplessness to a cause. This cause can be stable or unstable, global or specific, and internal or external. The attribution chosen influences whether expectation of future helplessness will be chronic or acute, broad or narrow, and whether helplessness will lower self-esteem or not. (p. 49)

Thus, when people perceive that their behavior does not influence the outcome of a situation, Abramson et al. (1978) would expect them to make a set of decisions about the cause of their helplessness. They would decide whether the helplessness is caused by something that changes readily or is relatively unchanging (unstable vs. stable), whether this cause is specific to this one situation or more generally affects other areas of their life (specific vs. global), and whether the cause is due to something about themselves or due to something about the situation or other people (internal vs. external). These authors predict that depressed people will attribute failure to global, stable, and internal factors while attributing success to specific, unstable, and external factors.

Some recent research testing this reformulation of learned helplessness has lent support to this theory, but other results have proven to be inconsistent with the theory. Sweeney, Shaeffer, and Golin (Note 7) found that, among college students, the attributional dimensions of internality, stability, and globality (as measured by an attributional-style questionnaire) were correlated with a self-report measure of depression. Seligman, Abramson, Semmel, and

von Baeyer (1979) found students' scores on a depression measure to be positively correlated with the marking of stable, global, and internal attributions when they were asked to specify the causes of hypothetical negative outcomes on a questionnaire, and negatively correlated with the tendency to make stable and internal attributions for hypothetical positive outcomes. Litman-Adizes (Note 8) also found that undergraduates classed as depressed according to the BDI did show a pattern of internal attribution and self-blame following a manipulated failure experience on a concept-attainment problem. Contrary to predictions, however, Kuiper (1978) found that female students rating as depressed on a 14-item self-report measure of depression attributed both success and failure on a word-association task to internal causes; and he found no differences between normals and the depressed students on ratings of the stability of outcomes. Similarly, Rizley (1978) found that students who scored as depressed on the BDI rated the internal factors of effort and ability as more important in causing failure on a number-guessing task than did normal subjects; yet when placed in an "advisory" role to another student doing a "social perception" test, depressives attributed more influence to themselves than nondepressed subjects, whether the influence was seen as positive or negative. Using depressed psychiatric inpatients, nondepressed psychiatric inpatients, and nondepressed controls as subjects (categorized by psychiatric diagnosis, clinical ratings, and questionnaires), Gotlib (Note 9) found that all subjects attributed success on a verbal recognition task more to internal than to external factors. In a failure situation, both depressed and nondepressed

inpatients attributed equal importance to internal and external factors while the control group attributed failure more to external than internal causes. These findings that depressives take credit for success do not fit in with the reformulated model of learned helplessness, and Gotlib's study raises the question as to whether certain attributional patterns are specific to depression, or whether they are applicable to pathological groups in general.

The learned helplessness researchers have focused almost exclusively on one specific type of cognition: causal attributions about positive versus negative outcomes. Although the reformulation of this model has allowed more flexibility in viewing various dimensions of causal attributions, their research is still limited to this one type of cognition. The fact that, when asked specific questions about causal attributions, depressed people respond differently from non-depressed people, does not in any way prove that depressed people do in fact arrive at such attributions outside the laboratory and that it is these attributions which lead to depression. Wortman and Dintzer (1978) have raised the question of whether people do spontaneously make these types of causal attributions when they are not cued to do so by experimenter's questions. The one helplessness experiment (Hanusa & Schulz, 1977) that gave subjects the chance to give a free response to the failure or success manipulation found that subjects did not spontaneously report causal attributions even when probed. Wortman and Dintzer also point out that there are many other types and levels of attributions possible and many other possibly important variables besides the few variables in the learned helplessness

reformulation. Hamman et al. (Note 6) specify that "causal cognitions represent only a portion of the cognitive events important in understanding relationships between events and affect" (p. 29). Before focusing on one narrow type of cognition, it might make sense to do more naturalistic studies exploring the types of cognitions people actually experience along with and prior to the development of depression, and then move on to analogue studies to further delineate the dimensions involved in these cognitions. The study reported in this paper will attempt to investigate the types of cognitions spontaneously generated by the subjects through the use of a structured interview, rather than asking only specific questions about a few types of cognitions.

Another limitation with the learned helplessness research is that the helplessness experiments generally use only specific, clearcut success and failure experiences in their experimental paradigms. DeMonbreum and Craighead (1977) have pointed out that most environmental feedback in "real life" is rather ambiguous rather than clearly positive or negative. Depressed clients seem to often interpret this neutral or ambiguous feedback in a negative manner. In describing the depressed person's concerns with presumed deficiencies, Beck (1976) said, "He interprets ambiguous or slightly negatively toned experiences as evidence of his deficiency" (p. 113). By focusing primarily on clearly positive or negative feedback, the learned helplessness researchers have not explored the possible extent to which depressed people maintain their depression not through causal attributions regarding clearcut success or failure but through negative

interpretations of ambiguous day-to-day situations. This current study seeks to create realistic, ambiguous stimulus situations to which subjects will be asked to respond, rather than artificially clearcut successes or failures.

The learned helplessness research is subject to the same criticism that much of Beck's cognitive research has received: that the use of college-student subjects identified solely by the use of a self-report measure severely limits the generalizability of the results. Any results clearly cannot be seen as applicable to clinical depression until populations of clinically depressed subjects have been used in the studies. Thus, these studies could be seen as analogues of clinical depression with limited usefulness until their generalizability has been extended through further research. Seligman (1978), however, also argues for the study of mild depression in its own right, and not just as an analogue of clinical depression. According to Seligman, "Mild depression is an enormously widespread and significant problem, its cost in misery and loss of productivity is untold, and I find it callous that investigation of the cause and cure of mild depression should be dismissed as analogues to some other, more real problem" (p. 177).

The line of research investigating the reformulation of the learned helplessness paradigm has led to a separate set of rather intriguing findings regarding depressed people's ability to accurately judge reality. Contrary to the original learned helplessness theory that depressives inappropriately perceive response-outcome independence, and contrary to the cognitive theory that depressives distort reality,

several studies have found that depressives actually perceive reality more accurately than do nondepressed people. In a series of experiments, students were given one of a set of problems varying in the actual degree of contingency. Subjects were asked to estimate the degree of contingency between their responses (pressing or not pressing a button) and an outcome (onset of a green light). College students categorized as depressed on the BDI were relatively accurate in judging the true contingencies between their responses and outcomes, while nondepressed students were significantly less accurate in their judgments, tending to distort their judgments in an optimistic manner (Alloy & Abramson, 1979). More specifically, nondepressed students overestimated the degree of response-outcome contingency when the noncontingent outcomes were frequent and/or desired, and then underestimated the degree of contingency when contingent outcomes were undesired. In a later study, subjects were presented with brief stories describing an event and two possible causes of the event (Alloy, Crocker, & Tabachnik-Kayne, Note 10). Subjects rated their expectation of the relationship between each of the two causes and the story outcome and rated their confidence in their expectations. Here again, students categorized as depressed on the BDI made more accurate covariation judgments than did the nondepressed students.

Studies in areas other than the judgment of contingency also have shown depressives to judge objective circumstances more accurately than nondepressives. For example, in a study by Nelson and Craighead (1977), students scoring 10 or above on the BDI accurately recalled the frequency of negative feedback they received in a laboratory

"perceptual vigilance" task, while students scoring between 0 and 5 on the BDI underestimated the frequency of the negative feedback. Rozensky, Rehm, Pry, and Roth (1977) found that nondepressed patients rewarded themselves more than was objectively warranted. The depressed patients in the study also tended to overreward themselves, but they were more accurate in their self-reward than the nondepressed patients. Finally, a study of Lewinsohn, Mischel, Chaplin, and Barton (1980) found patients categorized as depressed by MMPI scores and interviewers' ratings to be more accurate in rating themselves on 17 desirable attributes than nondepressed psychiatric patients or normal controls. Specifically, the nondepressed patients and the normal subjects rated their own social competence in a group-interaction situation more positively than observers rated them, while the depressed subjects rated themselves much as they were rated by others. Alloy and Abramson (1979) conclude that depressed people may in fact be "sadder but wiser" than nondepressed people. Cognitive illusions may enable nondepressed people to see themselves and their environment in a somewhat unrealistically positive light, and therefore help them to maintain their self-esteem. Lewinsohn et al. (1980) suggest that depression may be the "loss of the illusory warm glow" and that "to feel good about ourselves, we may have to judge ourselves more kindly than we are judged" (p. 212). These recent findings raise many intriguing questions: Is the world such a negative place that people need to distort reality in order to avoid depression? Is the basic tenet of cognitive theory and therapy that realistic thinking is the crux of appropriate affect totally wrong? Are people depressed not,

as Beck states, because they distort reality but because they fail to distort reality?

Integration of Findings

The apparent conflict between the findings that depressives judge reality more accurately than normals and Beck's theory that people become depressed by distorting reality might be resolved through a more careful and thorough delineation of the specific processes by which depressives come to distort reality in ways that maintain depression. Although Beck describes the cognitive distortions which he views as being involved in maintaining depression, he does not explore the processes through which an individual would arrive at making these specific errors in thinking. Eric Klinger's (1977) incentive theory seems to provide a useful framework upon which to build a comprehensive theory of the processes involved in depressive distortions.

Briefly summarized, Klinger (1977) believes that behavior and experience are organized around the enjoyment and pursuit of incentives. He defines an incentive as any object or event that tends to attract a person. Therefore, anything which people pursue, enjoy, or value is by definition an incentive. A negative incentive is an object or event which people wish to avoid, escape, prevent, or get rid of. One of Klinger's major hypothetical constructs is that of the current concern. He defines current concern as "the state of an organism between the commitment to pursue an incentive and either the attainment of the incentive or disengagement from it" (p. 37). He

specifies that his use of the term "current concern" does not refer to the thoughts or actions themselves, but to the hypothetical state underlying the thoughts and actions of the person. Since this is an abstract construct which seems to be an unnecessary addition to Klinger's theory, the concept of current concern will not be used in this paper. Discussion of people's commitment to incentives, without reference to any additional hypothetical constructs, seems to increase the clarity of the ideas while losing none of the substance of Klinger's theory.

According to Klinger, people are normally involved with numerous incentives at one time, and these incentives can be very specific or quite broad and abstract, long-term or short-term. Klinger sees incentives as influencing a person's thought content by determining what events a person selectively attends to. Evidence regarding the content of waking thoughts and dreams, most of it using thematic apperceptive techniques, indicates that a person is most likely to think or dream about something while it is related to one of his or her incentives (Klinger, 1971). The fact that subjects seem especially sensitive or attentive to incentive-related cues suggests that attention is especially attuned to material related to a person's current incentives. Klinger theorizes that the extent to which a given incentive will be influential in affecting thought content will be determined by the importance of the incentive to the person, the amount of time left before the incentive will be attained, and the probability that the incentive will be attained. Incentives are thought to affect the three aspects of cognitive functioning:

attention, retention, and thought content. A study by Klinger, Barta, Mahoney, et al. (1976) using a dichotic listening task showed that subjects attended more to incentive-related material than to material not related to incentives, recalled more of the incentive-related material, and subsequently thought more about incentive-related material.

Klinger discussed depression as part of the incentive-disengagement cycle. When something interferes with the attainment of an incentive, Klinger hypothesizes the presence of a cycle involving invigoration of behavior, aggression, depression, and then recovery. During this cycle, the value of the incentive is heightened while the value of other incentives in the person's life declines. Thus, people come to value one frustrated incentive and become temporarily heedless of incentives in other areas of their lives. Klinger sees depression as the process of giving up an incentive to which the person had become committed. He states that "Most people experience losses and most people tend to become depressed about them" and that "depression is a normal adaptive process of personal reorganization following a significant loss or defeat" (1977, p. 310). Klinger sees the symptoms of depression as reflecting heightened concern over something now lost and diminished concern with incentives which may still be available. Thus, he would anticipate that depressed people would be less attentive than nondepressives to all stimuli except those concerning the initial loss which initiated the depression.

Klinger's theory predicts that people become "depressed" only in response to loss of an incentive and that all these "depressions" would

be time-limited and adaptive. This fits the typical pattern for what is generally called "grief" and would seem to correspond to the type of subject in Hammen's (1978) study who showed depression, high life stress, and a low tendency to distort reality in a depressive manner. The finding that some depressed persons are more chronically depressed without an unusually high level of life stress suggests that Klinger's theory alone is not sufficient to explain the range of depressive phenomena. Although Klinger's theory may be adequate to describe one specific type of short-term grief-related depression, a more comprehensive model would be needed to explain the full range of depressive phenomena, including clinical depressions.

In order to build upon Klinger's framework to develop a more comprehensive model of the processes of cognitive distortion in depression, it is necessary to further explore the relationship between loss and depression. Klinger is not alone in connecting the experience of loss with depression. Ever since Freud's classic work, "Mourning and Melancholia" (1917), theorists have remarked on the presence of a close relationship between loss and depression. Although proponents of various theories of personality differ greatly as to what they believe the relationship between loss and depression to be, there seems to be general agreement across schools of thought that there is some important relationship between depression and loss. According to Freud (1917) and classical psychoanalysis, a significant loss may lead to either normal mourning or morbid melancholia (the earlier terminology for what has since come to be known as depression). In normal mourning, the energy involved in maintaining memories and

expectations of the lost object is gradually released and displaced onto other objects. In melancholia, however, the loss is followed by what is called a "pathognomic introjection" whereby the person's ego becomes identified with the lost object. Thus, the original ambivalence in the interpersonal relationship becomes transformed into an intrapsychic conflict. As Freud (1917) stated, "We perceive that the self-reproaches are reproaches against a love object which have been shifted away from it onto the patient's own ego. Their complaints are really plaints in the old sense of the word" (p. 248). According to Salzman (1970), a later psychodynamic theorist, depressives respond neurotically to the loss of narcissistic supplies by refusing to accept the loss and by attempting to coerce its restoration through depression.

Theorists from schools of thought widely different from psychoanalysis also have postulated an important, although different, relationship between loss and depression. Charles Ferster (1973) first laid the groundwork for a systematic behavioral theory of depression by stating that "The common denominator among depressed persons is the decreased frequency of many different kinds of positively reinforced activity" (p. 861). Ferster outlines one common depressive cycle resulting when a person loses a major source of reinforcement such as through the loss of a loved one. If the person then receives reinforcement for depressive behaviors from sympathetic friends and does not find alternative means of reinforcement, the depressive behavior may be maintained as the only source of reinforcement which is left to the person.

Beck's cognitive theory of depression also views loss as crucially related to depression. Beck (1976) describes the development of depression as a chain reaction that begins with an experience connoting loss to the individual. This loss might be one single, obvious event or a series of subtle deprivations; but if the individual is left feeling that some element or attribute essential for happiness has been lost, the downward spiral of depression may begin.

In a major survey study exploring the origins of depression, Brown and Harris (1978) interviewed a patient group of 114 women receiving psychiatric treatment for depression and a community group of 458 women selected randomly from the same South London borough. From their results, they conclude that there are three different ways that the experience of loss can contribute causally to depression: as a provoking agent which increases the risk of depression and helps to determine the time the depression begins, as a vulnerability factor which serves to increase the individual's sensitivity to later loss and increases the probability of responding to later losses with depression, and as a factor which influences the severity and the form of the depression which develops.

A combination of Klinger's incentive theory with the concept of loss as related to depression leads to a theory of depression which elucidates the process of cognitive distortion in depression and which would be applicable to the full range of depressive phenomena, including clinical depressions. The theory to be tested in this study suggests that rather than becoming depressed in response to the loss of one particular incentive (as Klinger describes), some people become

depressed because the avoidance of loss in general has become their most salient and powerful incentive. The early experience of loss could become a vulnerability factor in the later development of depression (as outlined by Brown & Harris, 1978) by leading an individual to make an overcommitment to the avoidance of any further losses. If the loss of incentives in general becomes an unusually powerful negative incentive for a person, Klinger's theory would predict that the person would then attend more to aspects of situations which might be related to loss, recall more about aspects of situations which might be related to loss, and think more about aspects of situations which might be related to loss. With the avoidance of loss being the incentive of primary importance to the person, other incentives, such as the possible achievement of gains, would be less likely to be noticed, remembered, or thought about. Over a period of time, this extreme commitment to avoiding loss and subsequent attention to aspects of situations related to loss, with its parallel lack of attention to aspects of situations which might be related to gain, could explain the process by which the depressive distortions outlined by Beck (1976) are developed. All the various depressive distortions discussed earlier in this paper may simply be different manifestations of this same process. Thus, the depressive may be quite capable of perceiving objective reality accurately (and perhaps even more accurately than nondepressives), but through the processes of attention, recall, and thought related to loss may come to interpret their perceptions in distorted ways.

As Beck (1976) states, one type of cognitive distortion common in depression is arbitrary inference, the process of drawing a conclusion when the factual evidence is lacking or contrary to the conclusion. This type of distortion is especially likely to occur when the cues are ambiguous, as in interpersonal situations. For example, a woman may go on a date with a man, he may thank her and tell her he had a good time, and she may end up concluding "He doesn't like me." This conclusion may seem to be contrary to the factual evidence as most people would judge it. If, however, as hypothesized in this study, the avoidance of loss has primary incentive value for some depressives, then when the cues are at all ambiguous, the depressive will attend more actively to those aspects of the situation which might be related to loss. He or she also will not notice other aspects of the situation which might be related to gain. Thus, the woman might notice and think about aspects of the date which could be related to rejection (such as the fact that he didn't ask her out again, his smile may not have been genuine, the expression on his face could be interpreted as one of boredom, etc.) rather than focusing on those parts of the date which could be related to acceptance (such as the fact that he said he had a good time, he laughed a lot, his facial expression could be interpreted as attentive, etc.). Therefore, while the depressive might tend to draw conclusions which would seem, to other people, to be logically unjustified by the available facts, the conclusion might indeed be logical given only the subset of loss-related facts and interpretations to which the depressive actually had attended.

Selective abstraction, the process of focusing on a detail out of context while ignoring other features of the situation, is another cognitive distortion described by Beck which could occur as a result of an overcommitment to the incentive of avoiding loss. For example, a student discussing a paper with a professor may conclude "I blew it" by focusing on the one negative comment the professor made and ignoring the many positive comments which also were made as well as ignoring the good grade that was given on the paper. By mainly attending to the potentially loss-related aspects of a situation, depressives often will seem to be picking small details out of context while missing other, possibly gain-related, features of the situation. These more positive aspects of a situation might seem salient to other people, but could remain unnoticed to the depressive focused on loss.

With the distortion of overgeneralization, a general conclusion is reached on the basis of one isolated incident. Thus, a student doing poorly on one quiz might conclude "I'm a lousy student" regardless of his performance on other quizzes. The person whose primary incentive is that of avoiding loss will not only attend more closely to loss-related aspects of current situations but will also tend to remember more clearly the loss-related elements of situations in the past. Thus, not only would the student attend to and focus on the current loss of doing poorly on the quiz, but he would also tend to recall all his past losses related to schoolwork while not as clearly remembering past gains or successes. Comparing the current poor

performance with all past poor performances, the student would conclude generally that "I always do badly in school."

The cognitive distortions of magnification and minimization, where the significance of negative events is magnified and the significance of positive events is minimized, could also follow directly from the exaggerated importance that the incentive of avoiding loss has to the depressive. With loss aspects of situations being given primary attention, retention, and thought, a realistic perspective on the importance of events could easily be lost. Such a strong focus on loss could make even a small loss seem highly significant while a large gain, when not attended to, would tend to lose its significance.

Absolutistic, dichotomous ("black-white") thinking could be explained by the fact that depressives may have only two main categories into which to classify their experiences. Unlike people who have many different goals varying in immediacy and importance, depressives have the one primary goal of avoiding loss which overshadows any other goals. Therefore, rather than classifying their experience in terms of how it relates to a variety of different goals, the depressive categorizes experience mainly as it relates to their one goal of avoiding loss: either the experience is categorized as "loss" or "not loss." With only two classifications of experience, the only possible judgments are extreme ones. Given their focus on loss as related to the self, judgments of the self are likely to be extreme and negative.

Finally, the cognitive distortion of personalization is the process of relating external events to oneself even when there is no basis for making such a connection. When primary importance is placed upon avoiding loss, it becomes crucial to attend to all stimuli which could conceivably be related to loss to the individual. As with avoidance of any threat, it may seem safer to err on the side of being overvigilant than to err by being undervigilant. The process of deciding the potential for loss is not there when it actually is may seem much more dangerous than making the decision that the potential for loss is there when it actually is not. Thus, when deciding whether an external event which has potential for loss relates to the self or not, the depressive will be likely to show the tendency to overpersonalize and interpret the event as indeed being related to oneself.

People with a primary incentive of avoiding loss who, as a result, develop the types of cognitive distortions decided above would appear to be quite different from the people Klinger describes as becoming depressed in response to the loss of a particular incentive. Although the objective number of stressful life events might be the same or fewer for those with a high incentive value on avoiding loss than for other people, they would perceive themselves as experiencing more loss, they would be depressed more frequently, their depressions would be more pervasive, and they would be much slower to recover from depression. The people involved in this process would correspond to the subjects in Hammen's (1978) study who were depressed with relatively

low objective life stress but a high tendency to distort in a depressive manner.

The heightened attention to elements related to loss may account for the fact that, in some experimental, achievement-oriented situations with objective contingencies, depressives seem to be more attentive and able to make more accurate judgments than nondepressed people. Especially in concrete situations with objective right or wrong answers, the depressives' commitment to avoiding the loss of failure may make them more attentive to the objective cues than other people and hence better able to make accurate judgments. This hypothesis fits well with the findings by Alloy et al. (Note 10) that adding an emotional component by introducing emotionally significant events into the stories used for the covariation task seemed to heighten the attention of the nondepressed subjects so that the nondepressed subjects became as accurate in their judgments as the depressed subjects. While heightened attention to cues related to possible failure might at times serve to improve the accuracy of the perceptions of depressed people, it is actually the interpretations made and conclusions drawn from these accurate data which are distorted. Even armed with the most accurate of perceptions, the depressive can distort her or his interpretations of those accurate data in ways that perpetuate the state of depression. For example, a depressed person may get an 80 on an exam and conclude "I'm a failure and I'll always be a failure." When asked what score he got on the exam, the student could report accurately that he received an 80, indicating that his perception of objective reality is indeed accurate. It is, however, the conclusion derived

from this perception, and the significance attached to it, which are distorted, not the perceptions themselves. Thus, depressives may not be "sadder" because they are "wiser." Instead, they may be "sadder" because they distort their interpretations of reality in characteristic ways, and being "wiser" in the perception of objective reality does not help them to overcome these distortions.

This study is designed to investigate the theory presented above that a primary commitment to the incentive of avoiding loss (through the focus of attention, recall, and thought) leads to the cognitive distortions outlined by Beck (1976) which produce and maintain depression. This study uses imagery to create a relatively naturalistic, ambiguous day-to-day situation within the laboratory to allow for the observation of the process by which people interpret ambiguous cues in ways that lead to an increase in depressive affect. A number of experimental and clinical studies have demonstrated that a mental image can function as an effective stimulus and can elicit physiological responses (May, 1977), emotional responses (Beck, 1970), and imaginary behavioral responses (Wade, Malloy, & Proctor, 1977) which are quite similar to subjects' responses to the actual situation. The current use of mental imagery allows the study of subjects' responses to an everyday stimulus situation without either the practical problems or the possible risks which could be involved in setting up actual situations. By using an open-ended interview format as well as paper-and-pencil questionnaires, it is hoped that the actual processes through which people spontaneously interpret ambiguous cues in their daily lives can be simulated and explored.

HYPOTHESES

According to the theory presented above, a primary commitment to the avoidance of loss in general may lead to the tendency to produce the types of depressive cognitive distortions which Beck (1976) describes as causing and maintaining depression. It is therefore hypothesized that the presence of a strong commitment to the incentive of avoiding loss will be positively related to depression.

> Hypothesis 1: There will be a significant positive correlation between commitment to the incentive of avoiding loss in general (as measured by the Loss scale of the Thought Survey) and depression (as measured by the Beck Depression Inventory).

According to Klinger (1977), when a person is depressed and places primary value on one particular incentive which has been lost, the importance of other incentives in the person's life declines. Extending Klinger's theory to apply to the theory presented above, a person who has made a strong commitment to the avoidance of the loss of incentives in general would become relatively heedless of other possible incentives, such as those related to the gain of incentives. It is therefore hypothesized that since depression is positively related to the strong commitment to the negative incentive of loss, depression will be negatively related to the commitment to the positive incentive of gain.

> Hypothesis 2: There will be a significant negative correlation between commitment to the incentive of achieving gain in general (as measured by the Gain scale of the Thought Survey) and depression (as measured by the Beck Depression Inventory).

Klinger (1977) states that the commitment to goals strongly influences both attentive and retentive processes. His research (Klinger et al., 1976) supports his theory that people attend to and recall more material which is related to their current incentives than material which is unrelated to their current incentives. Thus, it is hypothesized that a commitment to the incentive of avoiding loss in general will be related to the recall of those stimulus elements of the imagined scene related to loss for the individual, while a commitment to the incentive of achieving gains in general will be related to the recall of stimulus elements related to gain for the individual.

Hypothesis 3a: There will be a significant positive correlation between commitment to the incentive of avoiding loss (as measured by the Loss scale of the Thought Survey) and the recall of those stimulus elements in the imagined scene which are related to loss for the subject (as measured by the Image Description section of the Structured Interview).

Hypothesis 3b: There will be a significant positive correlation between commitment to the incentive of achieving gains (as measured by the Gain scale of the Thought Survey) and the recall of those stimulus elements in the imagined scene which are related to gain for the subject (as measured by the Image Description section of the Structured Interview).

Klinger also states that commitment to goals influences thought content (1977). His research has supported his view that people think more about material related to their current incentives than they think about material unrelated to their current incentives (Klinger et al., 1976). It is therefore hypothesized that commitment to the avoidance of loss in general will be related to the number of cognitions generated concerning stimulus elements related to loss for the individual, and that commitment to the achievement of gains in general

will be related to the number of cognitions generated concerning stimulus elements related to gain for the individual.

> Hypothesis 4a: There will be a significant positive correlation between commitment to the avoidance of loss (as measured by the Loss scale of the Thought Survey) and the number of cognitions the subject experiences concerning stimulus elements in the imagined scene which are related to loss for the subject (as measured by the Cognition section of the Structured Interview).

> Hypothesis 4b: There will be a significant positive correlation between commitment to the achievement of gains (as measured by the Gain scale of the Thought Survey) and the number of cognitions the subject experiences concerning stimulus elements in the imagined scene which are related to gain for the subject (as measured by the Cognition section of the Structured Interview).

The theory presented above states that an extremely strong commitment to the avoidance of loss in general could lead to a tendency to produce depressive distortions. Beck (1976) would expect this tendency to make depressive distortions to most commonly manifest itself through the generation of depressive, irrational "automatic thoughts" in response to ambiguous situations. Thus, it is hypothesized that the commitment to the incentive of avoiding loss will be related to the number of depressive, irrational thoughts generated in response to an ambiguous image.

> Hypothesis 5: There will be a significant positive correlation between commitment to the incentive of avoiding loss (as measured by the Loss scale of the Thought Survey) and the number of irrational-depressed thoughts generated in response to the image (as measured by the Cognition and Appraisal sections of the Structured Interview).

Beck (1976) also states that it is depressive, irrational "automatic thoughts" which lead to the experience of depression and depressive affect. It is therefore hypothesized that the number of depressive-irrational thoughts will be related to the increase in depressive affect following the imagery.

Hypothesis 6: There will be a significant positive correlation between the number of irrational-depressed thoughts generated in response to the image (as measured by the Cognition and Appraisal sections of the Structured Interview) and the increase in depressive affect following the imagery experience (as measured by the Depressive Adjective Checklists Forms A and C).

Previous studies have shown life stress and depression to be associated (Hammen, 1978; Ilfeld, 1977; Paykel et al., 1969) and have shown that depression is related to the tendency to distort interpretations and evaluations in a depressive manner (Hammen, 1978; Krantz & Hammen, 1979; Watkins & Rush, Note 4). Although both life stress and depressive cognitive distortion have been shown to be related to depression, Hammen (1978) found an interaction suggesting that among depressed persons, low life stress was associated with greater depressive distortion than was high life stress. In keeping with these findings, it is hypothesized that the presence of stressful life events will be related to depression for subjects who do not show a strong tendency to produce depressive cognitive distortions, but life stress will not be related to depression for subjects who do show a strong tendency to produce depressive cognitive distortions.

Hypothesis 7a: There will be a significant positive correlation between life stress (as measured by the Life Events Inventory) and depression (as measured by the Beck Depression Inventory) when the tendency to distort in a depressive manner (as measured by the Story Completion Test, the Cognitive Response Test, and the Dysfunctional Attitude Scale) is low (within the bottom 25% of scores).

Hypothesis 7b: There will not be a significant positive correlation between life stress and depression when the tendency to distort in a depressive manner is high (within the top 25% of scores).

METHOD

Overview of the Procedure

To test the theory that a primary commitment to the incentive of avoiding loss (through the focus of attention, recall, and thought) leads to the cognitive distortions which produce and maintain depression, volunteer subjects were asked to complete a number of paper-and-pencil measures in an initial group session. They were then scheduled for an individual session during which they were instructed to imagine three complex stimulus situations. Subjects completed paper-and-pencil measures of emotion before and after the second of these images, and then the content of the image and their cognitive and emotional responses to it were assessed through a detailed structured interview.

Subjects

All subjects participating in this study were volunteers enrolled in introductory psychology courses at Michigan State University. They received extra credit toward their grades in the course for participation in this research. A total of 174 subjects took part in Session 1, including 107 females, 65 males, and 2 subjects who failed to give any demographic information. One hundred sixty-one subjects were between 18 and 21 years of age, with 4 subjects under 18 and 7 subjects between 22 and 30 years of age. One hundred sixty-five of the subjects were

single, with 5 subjects married and 2 subjects living with a significant other.

Of the 174 subjects who completed Session 1, 124 subjects returned to participate in Session 2, 15 subjects were unable to arrange a Session 2 meeting due to schedule conflicts, and 35 subjects were scheduled to participate in Session 2 but failed to do so. The subjects who completed the entire study included 75 females, 48 males, and 1 subject who did not give any demographic information. One hundred fourteen of these subjects were between 18 and 21 years of age, with 4 subjects under 18 years old and 5 subjects between 22 and 30 years of age. One hundred seventeen of these subjects reported being single, with 1 subject married and 2 subjects living with significant others.

Experimenters

All experimental sessions were conducted by advanced undergraduate experimenters who participated in this research to partially fulfill the requirements of an upper-level independent study course in psychology. The nine experimenters, five females and four males, were trained to conduct the sessions by the principal investigator and were closely supervised.

All experimenters participated in 16 hours of training plus eight hours of practice in conducting the experiment with pilot subjects before they began conducting the experiment with actual experimental subjects. They were trained in conducting both of the experimental sessions, conducting the structured interview, scoring the structured interview, and scoring the Cognitive Response Test through the use of didactic presentations, demonstrations, role-plays, and practice

sessions. They also read and discussed readings on interviewing techniques by the Survey Research Center (1976) and by Richardson, Dohrenwend, and Klein (1965) as well as an article on general experimental issues by Orne (1962). After the training was completed and the experimenters began conducting experimental sessions, they continued to meet with the principal investigator for at least two hours per week for supervision and the discussion of problems and issues as they arose.

The principal investigator monitored the structured interview tapes done by each experimenter after the completion of the training until they each demonstrated that they could accurately follow the outline for the structured interview. Subjects tested before the experimenter demonstrated ability to accurately follow the structured interview outline were considered to be pilot subjects and only data collected after each experimenter had demonstrated the ability to follow the interview format were included in the data analysis.

Part of the 16 hours of training included training in scoring of the Cognitive Response Test. Experimenters practiced scoring Cognitive Response Tests until each experimenter achieved at least 75% agreement with the criterion sample tests provided by Watkins and Rush (Note 4). Only after they each achieved this level of accuracy did the experimenters begin scoring the experimental Cognitive Response Tests.

Measures

The measures administered in Session 1 of this study included the following measures:

Story Completion Test

Krantz and Hammen (1979) designed the Story Completion Test (SCT) to measure depressive cognitive processes. The SCT consists of six hypothetical story situations which are commonly problematic to college students. Each story is followed by multiple-choice questions (a total of 23 for the six stories) pertaining to the central character's thoughts, feelings, and expectations. Subjects are asked to choose the option which would best represent their own response to the situation. Each question has four response options tailored to include one of each of the following: depressive-distorted, depressive-nondistorted, nondepressive-distorted, and nondepressive-nondistorted. "Distortion" is defined by the authors as logically unjustified conclusions drawn from the information provided. An effort was made by the authors to construct the depressed-distorted responses to depict the various types of cognitive distortion as described by Beck (1976).

The coefficients of internal consistency computed by the KR-20 formula on both depressed and nondepressed samples were only moderately high (.61 to .79), which the authors attribute to the heterogeneity of the concept of cognitive distortion, the lack of homogeneity of the items, and the short length of the questionnaire. The interjudge agreement was at least 80% on the four scoring categories for each item. Moderate congruent validity (r = .31) has been established with Byrne's Repression-Sensitization Scale (Byrne, 1964), which measures distortions in a somewhat different sense. On a sample of 355 undergraduate and graduate students, the correlation between the SCT and

the Dysfunctional Attitude Scale (a measure of irrational beliefs discussed below) was found to be .52 ($p < .001$).

Data from samples of a number of different populations support the hypothesis that more depressed people make more depressed-distorted responses on this test. In both male and female college students, relatively more depressed students had significantly greater depressive-distortion scores than did less depressed students (Krantz & Hammen, 1979). This same pattern of results was found among volunteers receiving treatment for depression, psychiatric inpatients, and subjects asked to role-play either a depressed or nondepressed role (Krantz & Hammen, 1979).

Personal Data Sheet

The Personal Data Sheet (PDS) is a 14-item questionnaire, developed for this study, which asks for specific demographic information and information about childhood which may be related to some of the variables being studied (Appendix A).

Questions were asked about the demographic variables of age, sex, and marital status. In addition, questions were asked about the occurrence of specific losses during childhood, including moves, the divorce or separation of parents, and the death of parents. The concept of loss plays an important role in this study, yet the connection between depression and the experience of loss during childhood is not directly explored in this study. Many different theorists have attributed great etiological importance to childhood loss in the development of depression, including Melanie Klein (1940), Adler

(1959), and even Beck (1976). In their major survey study, Brown and Harris (1978) conclude that the experience of loss in childhood is a vulnerability factor which may increase sensitivity to loss and increase the probability of developing depression later in life. Specifically, the loss of mother before age 11 was found to be of significance. Items concerning childhood losses, therefore, were included in the PDS to allow for the later, post hoc exploration of some of the relationships between childhood loss and depression in order to help generate hypotheses for future research.

Cognitive Response Test

The Cognitive Response Test (CRT) was designed to assess the "automatic thoughts" occurring in conjunction with specific situations (Watkins & Rush, Note 4). Its open-ended, sentence-completion format is intended to minimize the problem of transparency which has been noted in regard to attitude-endorsement measures. The CRT contains 50 sentence stems to which the subject responds by writing in his or her first thought. The situations presented were chosen to reflect major areas of social interaction such as occupation, family, marriage, and friendships.

A scoring manual has been developed which establishes rules for deciding which of the following four categories the response fits into: Rational, Irrational-Depressed, Irrational-Other, or Non-scorable. Responses are considered rational unless they meet one of the criteria for the other three scores. In general, Rational responses include qualified responses, questions, or the expression

of a wish or hope. Watkins and Rush (Note 4) give the following as an example of a qualified response which would be scored as Rational: "I make an error in my work and it is called to my attention. My first thought is ... 'perhaps I need to pay more attention to my work.'" Since qualified responses imply that alternatives are being considered, they are scored as Rational.

Irrational responses meet at least one of the following four criteria: exaggeration, demand statements, absolutism, or belief in luck. Irrational responses are then divided into two separate categories: Irrational-Depressed and Irrational-Other. A score of Irrational-Depressed is given when an irrational response also shows a negative view of the self, the past, the present, or the future. One example of a response showing a negative view of the self is the following: "I hear two people talking and hear my name mentioned. My immediate thought is ... 'they are talking about how clumsy I am.'" Another example of an Irrational-Depressed thought is: "I've been trying to get a date for the past three weekends and have not been successful. I think to myself ... 'my social life will never improve.'" Thoughts which meet the criteria for Irrational but do not meet the criteria for Depressed are scored Irrational-Other. This category includes thoughts indicating a negative view of other people, as well as any other irrational but nondepressed thoughts. For example, "I have a whole day's activities planned with a friend. Soon after awakening on that day I get a message my friend will not be coming. My immediate thought is ... 'he is an inconsiderate person.'" This is considered irrational because the person is assuming the

friend possesses a negative trait without adequate data to support that assumption.

The Non-scorable category includes responses that are blank or unscorable, lack sufficient clarity to understand, or require so much inference to understand that they would be categorized in a highly unreliable way.

The CRT was administered to depressed and nondepressed psychiatric outpatients as well as to nondepressed volunteers, all matched for age, sex, and educational background (Watkins & Rush, Note 4). Analyses of variance showed that the depressed outpatients gave significantly more Irrational-Depressed responses than either the nondepressed outpatients or the nondepressed volunteers. Pair-wise percent agreements ranged from .77 to .81, while the mean interjudge correlation across all four judges was .84.

Life Events Inventory

The Life Events Inventory (LEI) is a list of 55 stressful events common to college students (Cochrane & Robertson, 1973). Subjects are asked to indicate which of the events occurred to them in the past six months. The weights assigned to items for use in totalling the number of "life change units" were derived from samples of college students, psychiatrists and psychologists, and psychiatric patients. Good agreement was found even among such a disparate group of judges, and the coefficient of concordance for all three groups was .89. Since a college-student population is being used in the current study, only the weights derived from Cochrane and Robertson's (1973) sample of college students were used in this study.

The LEI is a measure of objective stressful life events. In order to also assess the subjects' subjective experience of stress, a question was included on the PDS asking how stressful subjects feel the past six months have been for them.

Dysfunctional Attitude Scale

The Dysfunctional Attitude Scale (DAS) is a measure recently developed by Weissman (Note 2) "to measure the extent to which persons hold beliefs which predispose them to depression." The DAS consists of two parallel forms, each having 40 statements, which are rated on a 7-point modified Likert scale, rating from Totally Agree to Totally Disagree. The total DAS score for each person is simply the sum of the scores for each of the 40 statements. The items of the scale were derived clinically, and statements were selected which seemed to most accurately describe the attitudes underlying the cognitive distortions of Beck's cognitive model of depression (1976). Both forms of the DAS were tested in a sample of 355 college students. The internal consistency, as measured by coefficient alpha, ranged from .89 to .92, while test-retest reliability over an eight-week period was .84. Weissman also found a significant relationship between the salience of a person's dysfunctional attitudes (as measured by the DAS) and the intensity of depression (as measured by the Beck Depression Inventory and the Depression Scale of the Profile of Mood States). In addition, test-retest correlations over an eight-week period were found to be significantly higher for the DAS than for either the Beck Depression Inventory or the Depression Scale of the

Profile of Mood States, indicating that dysfunctional attitudes were more persistent over time than depressed affect. The relationship of age, sex, race, and educational level to score on the DAS was studied, and although both sex and educational level were significantly related to the DAS, these significant differences were small, accounting for only 4% of the variance. Weissman has shown that the DAS discriminates among normals at varying levels of depression, but further research is needed to determine whether the DAS can also be useful in discriminating among various psychiatric groups.

The measures administered in Session 2 of this study included the following:

Thought Survey

The Thought Survey (TS) is a 68-item questionnaire developed for this study as a measure of the degree to which various elements of the stimulus situation which subjects were asked to imagine are related to the subjects' incentives (Appendix B). It is based on Klinger's (1977) assumption that subjects exert more "cognitive work" on topics which are more strongly related to goals and that, therefore, the frequency of thoughts about a given topic reflects the degree of relationship to goals.

The TS is composed of a total of six subscales. One subscale assesses the frequency of thoughts concerning the incentive of the pursuit of possible gain in general, while another subscale measures the avoidance of possible loss in general. Since the stimulus situation which the subjects were asked to imagine contained four major

stimulus elements (opposite-sex peer relationships, same-sex peer relationships, academic achievement, and intrusion), the other four subscales of the TS assess the frequency of thoughts about each of these stimulus elements. In each of these scales, there are items related to both the avoidance of loss and the achievement of gain regarding the incentive. Therefore, the TS can be scored for the frequency of thoughts about avoiding loss in general, achieving gain in general, incentives concerning each of the four stimulus elements, incentives of avoiding loss in relation to each of the stimulus elements, and incentives of achieving gain in relation to each of the stimulus elements. A stimulus element is defined as related to loss if the subject's score for the frequency of thoughts related to the loss of that element is greater than the score for the frequency of thoughts related to the gain of that element. A stimulus element is defined as related to gain for a subject if the score for the frequency of thoughts related to gain for that element is greater than the score for the frequency of thoughts related to the loss of that element.

A preliminary version of the TS was distributed to a class of approximately 600 introductory psychology students along with a number of other measures being used by other experimenters. The students were instructed to complete the TS and return it at the next class meeting. Properly completed answer sheets were returned by 274 students, 105 males and 169 females, a return rate of approximately 45%. This sample was divided arbitrarily into two samples, and an item analysis was conducted using data from Sample A ($\underline{n}$ = 128). Subscales

were shortened to 10 items for same-sex, opposite-sex, academic, and intrusion subscales and to 16 items for the gain and loss subscales on the basis of item-total correlations and coefficient alpha for the subscale with the item deleted. The results of this procedure were then cross-validated using the data from Sample B (n = 146).

The internal consistency of the shortened subscales, as measured by coefficient alpha, ranged from .891 to .948. The gain and loss subscales, with alphas of .896 and .891, respectively, showed a correlation with each other (r = .88) that was as high as their reliability, indicating that the subjects may not have been able to distinguish between the categories of pursuit of gain versus the avoidance of loss given the way the items were written.

The items of the gain and loss subscales were rephrased to ask subjects to rate the frequency of specific thoughts, and the TS items were reorganized so that the items from the same-sex, opposite-sex, academic achievement, and intrusion subscales were randomly sequenced among Items 1 through 46 and the items of the revised gain and loss subscales were randomly sequenced among Items 47 through 68. The results of a preliminary item analysis conducted on an availability sample of 45 subjects (undergraduate experimenters, experimenters' friends, and pilot subjects) found that all subscales had adequate internal consistency (alphas ranging from .763 to .903) and that the scores on the revised gain and loss subscales were more independent of each other (r = .52). The results of an item analysis of the TS conducted using the data from this study are summarized in the Results section.

Beck Depression Inventory

The Beck Depression Inventory (BDI) has been called "probably the best developed and most widely used self-report depression measure" (Becker, 1974, p. 25). The BDI was developed as a measure of the level of depression in a client, not as a means of distinguishing between standard diagnostic categories (Beck et al., 1961). The scale consists of 21 categories covering the various psychological, physiological, and behavioral manifestations of depression. Each item consists of four statements ranked in order of severity, and the subject is asked to choose the statement closest to his or her present state.

The internal consistency of the BDI has been demonstrated using two separate methods (Beck et al., 1961). First, all items were found to be significantly related ($p < .001$) to the total score in a psychiatric sample of 200 subjects. In addition, split-half Spearman-Brown corrected Pearson r equaled .93 with a sample of 97 psychiatric cases. A test-retest reliability of .74 has been reported for 31 normal undergraduates using a three-month interval between testings (Miller & Seligman, 1973).

The validity data for the BDI are encouraging as well. Beck and Beamesderfer (1974) summarize the results of eight different studies finding correlations between diagnosticians' ratings and BDI scores to range from .616 to .73, in the United States as well as in four countries outside of the United States. Correlations of the BDI with symptom checklists, the MMPI Depression Scale, and the Hamilton Rating Scale for Depression range from .66 to .75 (Beck, 1967). As

evidence for the discriminant validity of the BDI, Beck found a correlation of .72 between the BDI and clinician's ratings of depression in a sample of 606 psychiatric patients, but only found a correlation of .14 between the BDI and clinician's ratings of anxiety. In terms of construct validity, the BDI has been successfully used as the criterion measure of several simple hypotheses about depression, summarized by Beck and Beamesderfer (1974). BDI scores have been found to be unrelated to race, age, and intelligence, but females and the less well-educated do tend to obtain higher scores (Beck & Beamesderfer, 1974). The BDI has recently been validated on a sample of university students (Bumberry, Oliver, & McClure, 1978). The Pearson product-moment correlation coefficient between the inventory and psychiatric rating of depth of depression was .77, indicating that the BDI is valid for use with a college population.

Depression Adjective Check Lists

The Depression Adjective Check Lists (DACL) were developed to provide brief, reliable, valid measures of subjective depressive mood (Lubin, 1967). Although seven different forms of the DACL were available, this study used only Form A and Form C. Each of these forms of the DACL consists of 32 adjectives describing mood and feelings. Subjects are asked to check all the words which describe how they feel now.

Lubin (1967) computed internal consistency from a two-way analysis of variance using the method suggested by Winer (1962). The internal consistency of Form A was .86 for females and .81 for males, while the

internal consistency for Form C was .88 for females and .88 for males. The split-half reliability coefficients for Form A and Form C were both .92 with males and females combined. Validity was tested by correlating the DACL with the Beck Depression Inventory. Significant correlations were found between Form A and the BDI (r = .38, p < .05) and between Form C and the BDI (r = .50, p < .01).

Since the change score between DACL scores for the pretest (Form A) and the posttest (Form C) was being used in testing the hypotheses of this study, the reliability of this change score was computed using Lubin's (1967) data for a predominantly college-student population. The reliability of this change score was found to be .47.

Differential Emotion Scale

The Differential Emotion Scale (DES) has been included for use in another study (Pretzer, Note 11).

Structured Interview

The structured interview (in Appendix C) consists of a set of prescribed questions which the experimenter asked each subject. Subjects' responses to the questions were audio-taped. Experimenters, who were trained in the procedure for scoring the content of the subjects' responses, asked additional questions as needed to clarify ambiguous or nonscorable responses. The audio-taped interviews were scored by the experimenters for the following content categories: whether or not each stimulus element was included in the image description, the number of cognitions the subject reported having had which referred to each stimulus element, and whether or not any depressive,

irrational cognitions were reported during the Cognition and Appraisal sections of the interview. The presence of irrational-depressed cognitions was scored using a revised version (Appendix D) of the manual for the Cognitive Response Test (Watkins & Rush, Note 4).

Participant's Evaluation Form

The Participant's Evaluation Form (PEF) is a 17-item measure developed for this study to evaluate the credibility of the rationale presented for the study, the extent to which subjects were able to guess the specific hypotheses being tested, and to provide subjects with an opportunity to submit complaints, comments, and suggestions (Appendix E).

Procedure

The initial session was conducted with a group of volunteers in a large classroom. The size of the groups ranged from 35 to 50 subjects, with one group of only four subjects due to scheduling the session at an unpopular time. Following standardized instructions (Appendix F), experimenters explained to the subjects that they were participating in a study of imagination, thought, and feeling and that they would be asked to participate in a subsequent session during which they would imagine everyday scenes and then discuss their thoughts and feelings with an interviewer. Subjects were told that they would be free to discontinue participation at any point, and written consent was obtained (Appendix G). Subjects were asked to complete the SCT, and PDS, the CRT, the LEI, and the DAS in that order.

The experimenters then scheduled individual meetings for the second session.

The second session was conducted in a private room with the subject seated in a reclining chair. The experimenter followed a standardized outline (Appendix C). The session began with a restatement of the purpose of the study, a brief overview of the procedure, and a reminder of the option to discontinue participation at any point. Subjects were asked to sign a written consent form (Appendix H) permitting the experimenter to audio-tape the interview later in the session, and to complete the TS and the BDI, in that order. The following tape-recorded imagery practice instructions were presented:

> I'm going to ask you to imagine being in a situation that could well happen and I'd like you to imagine as realistically as possible that you are there in that situation. As you imagine the scene, try to see, hear, and feel just as you would if you were actually there and continue imagining until I ask you to stop.
>
> Now, get in a comfortable position and relax. Close your eyes to shut out distractions and get ready to imagine being in the situation I describe. Imagine all the sensations that go along with the situation, the feel, smell, taste, and sound of the situation as well as how it looks, even if they are not all mentioned specifically. Start imagining being in the situation as I describe it and continue imagining until I ask you to stop.
>
> Imagine that you're standing outside, in the snow, in the late afternoon. Snowflakes are slowly falling and as you watch them you feel the cold breeze against your face and you feel the warmth of your jacket. Feel the cold air as you inhale and the soft touch of a snowflake on your cheek. Hear the sound of traffic in the distance and look at the scene around you. Notice that your feet are starting to feel the cold and that it's growing dark. As you turn to walk home, listen to the soft sound of your footsteps in the snow. Continue imagining this situation until I ask you to stop. . . . Stop imagining now (pause) and open your eyes.

At this point, the experimenter stopped the recording and asked if there were any questions. Once all questions were answered, the

subject was asked to complete the DACL--Form A and the DES, in that order. Then, the following tape-recorded imagery instructions were presented:

> In a second I'll ask you to imagine being in another situation that could well happen. As I describe the situation, imagine it as realistically and vividly as you can. Try to mentally see, feel, and hear all the parts of the scene just as though you were there and continue imagining being there until I ask you to stop.
>
> After you finish imagining that situation, you'll be asked some questions about what you imagined and about your thoughts and feelings while you imagined it. You'll find it easiest to answer these questions if you simply pay attention to your imagination, your thoughts, and your feelings without trying to focus your attention on all the details.
>
> Now get in a comfortable position and relax. Close your eyes to shut out distractions and get ready to imagine being in the situation I describe. Imagine all the sensations that go with the situation, the feel, smell, taste, and sound of the situation as well as how it looks, even if they are not mentioned specifically. Start imagining being in the situation as I describe it and continue imagining until I ask you to stop.

In order to control for primacy and recency effects on recall, subjects were randomly assigned to hear one of the two following sequences of image description:

1. Imagine that you're sitting on a bench outside a campus building on a spring morning. The sun is shining warmly and you can feel a gentle breeze. As you wait for a 10-point quiz you'll be taking in half an hour, people are walking past you on the sidewalk. You notice a girl (or guy, person of opposite sex) on a bench across from you and she (or he) seems to be looking your way. A guy (or girl, same sex) you know from last term walks by without saying anything and a guy (or girl, same sex) you don't know sits down right next to you on the bench. Continue imagining this situation until I ask you to stop. . . . Stop imagining now (pause) and open your eyes.

or

2. Imagine that you're sitting on a bench outside a campus building on a spring morning. A guy (or girl, same sex) you know from last term walks by without saying anything. You notice a girl (or guy, opposite sex) on a bench across from you and she (or he) seems to

> be looking your way. A guy (or girl, same sex) you don't know sits down right next to you on the bench. As you wait for a 10-point quiz you'll be taking in half an hour, you can feel a gentle breeze and the sun is shining warmly. Continue imagining this situation until I ask you to stop. . . . Stop imagining now (pause) and open your eyes.

They were asked to maintain the image for 60 seconds from the beginning of the image description.

Immediately following the image, subjects were asked to complete the DACL--Form C and the DES--Form B. They were then asked to respond to the structured interview, and their responses were tape-recorded. Following the interview, they were again asked to recline and close their eyes, and the following tape-recorded instructions for a neutral, relaxing image were given:

> Now get in a comfortable position and relax. Close your eyes to shut out distractions and get ready to imagine being in the situation I describe. Start imagining being in the situation as I describe it and continue imagining until I ask you to stop.
>
> Imagine that you are lying on a beach in the warm sunshine. Feel the soft breeze and the warm sand. Listen to the sound of the surf and the cry of the sea birds. There is nothing for you to do but lie back and enjoy relaxing on the beach. Focus all your attention on the sensations of the beach, the smell of the salt air, the warmth of the sun, and relax. Just continue to relax. Continue imagining this situation until I ask you to stop. . . . Stop imagining now (pause) and open your eyes.

They were asked to maintain the image for 60 seconds. Following this image, subjects were asked to fill out the PEF.

At the end of the session, subjects were provided with an opportunity to ask any questions they wished to ask and were told how to contact the principal investigator if they wanted information which the experimenters (blind to hypotheses) were unable to provide. Subjects were informed of the opportunity to receive information about the results of the study when the study had been completed, if they

were interested. They were given a brief written explanation of the study (Appendix I) with the names and phone numbers of the principal investigator and the supervising professor in case they later decided they wanted further information about the study or would like to discuss their emotional reactions to the study. Before they left the experiment, each subject was asked how they were feeling. If anyone expressed strong unpleasant feelings or concerns related to the study, they were encouraged to contact the supervising professor immediately. The experimenters also had a list of 24-hour emergency referral sources available in the community in case the supervising professor was not immediately available and immediate attention seemed to be necessary.

RESULTS

Characteristics of the Sample and Effects of Attrition

A total of 124 subjects completed the entire study. Descriptive statistics on the measures used for hypothesis testing are presented in Table 1. The frequency counts on the nominal variables used in the hypothesis testing are presented in Table 2. Of this final sample, 31% scored ≥10 on the Beck Depression Inventory, which has been designated by Beck as the cutoff for mild depression, while 7% scored ≥17, indicating clinical levels of depression according to Beck.

In order to determine whether the failure of some subjects to complete Session 2 resulted in a biased sample, T-tests were conducted to test for differences between subjects who completed both sessions and subjects who were scheduled to participate in Session 2 but failed to do so. No significant differences between the two groups were found on the demographic variables or on any of the variables assessed during Session 1. It was concluded that subject attrition did not systematically bias the sample.

Effects of Sex Differences

T-tests were computed between the means for females and males in order to check for sex differences on all the variables included in this study. Of the 29 comparisons, four showed significant differences between the sexes. Males whose parents had been divorced or

Table 1: Means, Standard Deviations, and Ranges of Scores on the Continuous Variables Used for Hypothesis Testing

Variable	Mean	Standard Deviation	Range
Sentence Completion Test-- Depressed-Distorted Scale	1.73	1.79	0- 8
Dysfunctional Attitude Scale	120.44	21.14	75-194
Cognitive Response Test-- Irrational-Depressed Scale	5.09	3.87	0- 19
Beck Depression Inventory	7.44	5.45	0- 27
Depression Adjective Checklist-- Form A	7.14	4.81	0- 21
Depression Adjective Checklist-- Form C	7.56	4.51	1- 25
Life Events Inventory	1.85	1.47	0- 12
Number of Thoughts About Same-Sex Acquaintance	2.77	2.12	0- 12
Number of Thoughts About Opposite-Sex Person	3.23	2.36	0- 14
Number of Thoughts About 10-Point Quiz	2.83	2.33	0- 14
Loss Scale of Thought Survey	18.25	5.59	10- 35
Gain Scale of Thought Survey	21.10	6.22	10- 41
Irrational-Depressed Thoughts in Response to Image[a]	.39	.49	0- 10

[a]Due to the low frequency of irrational-depressed thoughts in response to the image, this variable was converted to a dichotomous variable and included in Table 2.

Table 2: Number of Subjects Responding to Nominal Variables

Variable	Number of Subjects
Irrational-Depressed Thoughts in response to image:	
Reported none	73
Reported at least one	46
Recall of Same-Sex Acquaintance:	
Included same-sex acquaintance in Image Description	91
Did not include same-sex acquaintance in Image Description	31
Recall of Opposite-Sex Person:	
Included opposite-sex person in Image Description	98
Did not include opposite-sex person in Image Description	25
Recall of Quiz:	
Included quiz in Image Description	80
Did not include quiz in Image Description	42
Orientation toward Same-Sex Relationships:	
Loss-related to subject	36
Neutral to subject	14
Gain-related to subject	74
Orientation toward Opposite-Sex Relationships:	
Loss-related to subject	7
Neutral to subject	12
Gain-related to subject	105
Orientation toward Academic Achievement:	
Loss-related to subject	45
Neutral to subject	14
Gain-related to subject	63

separated were significantly older when the separation occurred than were females whose parents had been divorced or separated. Males showed significantly higher scores on the Gain Scale of the Thought Survey and on the Dysfunctional Attitude Scale than did females, while females reported having had significantly more thoughts about the quiz during the imagined scene than did males. To determine whether these differences led to differential support for the hypotheses between men and women, all tests of hypotheses were conducted first on the entire sample and then separately for the male and female subsamples. The results of the tests done for the separate female and male subsamples are reported only when they showed results which differed from the results found for the entire sample.

Reliability Analyses on Previously Published Measures

Internal consistency analyses were conducted to confirm the reliability of measures developed by other authors. The results of these analyses are summarized in Table 3. All the measures were considered to have adequate internal consistencies except for the Sentence Completion Test, which had a coefficient alpha of only .52. The authors of the SCT have acknowledged this problem with internal consistency, attributing it to the heterogeneity of the concept of cognitive distortion, the lack of homogeneity of the items, and the short length of the questionnaire (Krantz & Hammen, 1979).

In addition, an analysis of interrater reliability was conducted for the Cognitive Response Test, since the CRT is a sentence-completion test requiring scoring by raters. In order to permit this analysis,

30 of the CRTs were selected randomly and scored by all the experimenters. Only the CRT-Irrational Depressed Scale was included in this analysis, since that was the only CRT scale used to test hypotheses in this study. Pearson product-moment correlations between pairs of raters ranged from .73 to .91, with a mean correlation of .84 across all raters.

Table 3: Internal Consistencies of Previously Published Measures Calculated on Data From the Current Study

Measure	Coefficient Alpha	n[a]
Beck Depression Inventory	.80	121
Sentence Completion Test: Depressed-Distorted Scale	.52	105
Dysfunctional Attitude Scale	.85	105
Cognitive Response Test: Irrational-Depressed Scale	.77	105
Life Events Inventory	.83	167

[a]The value of n varies because all cases with missing data were eliminated from each analysis.

Reliability Analyses on Measures Developed for This Study

Thought Survey

The reliability of the Thought Survey subscale scores was estimated by computing coefficient alpha for each of the subscales. The internal consistency of the subscales was within the acceptable range, with α = .87 for the Gain scale, α = .82 for the Loss scale, α = .91

for the Same-Sex Relationship scale, α = .88 for the Opposite-Sex Relationship scale, α = .91 for the Academic Achievement scale, and α = .87 for the Intrusion scale.

Structured Interview

The analysis of interrater reliability for the variables scored from the structured interview was performed on 31 audio-taped interviews which had been randomly selected and scored by all the experimenters. Both percentage agreement and Pearson product-moment correlations were computed between pairs of raters, and the average results across raters were used as estimates of the reliability of the ratings. The results of this analysis are shown in Table 4.

While the strength of the agreement between raters and the pairwise correlations varied, no rater was consistently less reliable than the other raters. The ratings of the inclusion of stimulus elements in the description of the imagined scene and the ratings of the number of thoughts concerning each stimulus element showed interrater reliabilities above .75. Despite their training and ability to score reliably before the actual data collection began, the experimenters were not able to maintain adequate interrater reliability when scoring for the presence of irrational-depressed thoughts during the Cognition section of the interview. Because of the importance of this variable in testing the hypotheses in this study, the principal investigator rescored the structured interview for this variable. Although the principal investigator was not blind to the hypotheses being tested (as the experimenters had been), she did remain blind to all the other

Table 4: The Reliability of Experimenter Ratings of Subjects' Verbal Responses to the Structured Interview

Variable	Average % Agreement	Range	Average Interrater Correlation	Range
Inclusion of element in the description of the scene:				
a. Member of the opposite sex	.97	.97-1.00	.93	.84-1.00
b. Same-sex acquaintance	.95	.87-1.00	.82	.66-1.00
c. Ten-point quiz	.89	.73- .97	.76	.46- .93
Reported number of thoughts concerning:				
a. Member of the opposite sex	.96	.90-1.00	.92	.77-1.00
b. Same-sex acquaintance	.98	.93-1.00	.92	.66-1.00
c. Ten-point quiz	.95	.86-1.00	.96	.91-1.00
Presence or absence of irrational-depressed thoughts:				
As rated by experimenters	.63	.38- .82	.23	-.03- .50
As rated by the principal investigator[a]	.73	---	.52	---

[a]The principal investigator recoded this variable, and reliability was checked by comparisons with ratings done by a colleague.

data which had been collected on the subjects. To check on her reliability in scoring this variable, 30 interviews were selected randomly and scored by a colleague. The percentage agreement between their ratings was .73, with a Pearson product-moment correlation of .52. Due to the improved reliability of the variable as scored by the principal investigator, her ratings of the presence of irrational-depressed thoughts were used to test the hypotheses in this study.

Tests of Hypotheses

Hypothesis 1

The hypothesis that the presence of a strong commitment to the incentive of avoiding loss is positively related to depression was tested by computing the Pearson product-moment correlation coefficient between the Loss scale of the Thought Survey and the Beck Depression Inventory. Loss showed a correlation of .36 with the BDI, which is significant at the .001 level. Since the Loss scale of the TS was highly correlated with the Gain scale of the TS (r = .55, p < .001), the variance due to Gain was partialled out of the correlation between Loss and the BDI in order to more clearly separate the effects of Loss and Gain. With the effects of Gain partialled out, the correlation between Loss and the BDI was .34 (p < .001), confirming that this relationship is not due merely to the effects of Gain. Correcting for attenuation due to measurement error led to an estimated true correlation of .44.

Hypothesis 2

The hypothesis that the presence of a strong commitment to the incentive of achieving gain is negatively related to depression was tested by computing the Pearson product-moment correlation coefficient between the Gain scale of the Thought Survey and the Beck Depression Inventory. Gain showed a correlation of .16 with the BDI ($p < .05$). While this appears to be a significant finding in the opposite direction from the hypothesis, this is actually a spurious correlation accounted for by the high correlation between Loss and Gain. When the effects of Loss are partialled out of the correlation between Gain and the BDI, the correlation drops to -.05 ($p > .05$). Therefore, neither the hypothesis nor its opposite was supported by the results of this analysis.

Hypothesis 3

The hypothesis that a commitment to the incentive of avoiding loss in general is related to the recall of stimulus elements which are related to loss for the individual was tested by computing the correlation between the score on the Loss scale of the Thought Survey and the inclusion of stimulus elements related to loss for the individual in the description of the imagined scene. The hypothesis that a commitment to the incentive of achieving gains in general is related to the recall of stimulus elements related to gain for the individual was tested by computing the correlation between the score on the Gain scale of the Thought Survey and the inclusion of stimulus elements related to gain for the individual in the description of the imagined

scene. These correlation coefficients are presented in Table 5. Since the only significant correlation was one not predicted by the hypothesis, no empirical support was found for Hypothesis 3 in this study.

In order to more clearly separate the effects of Loss and Gain, since they are highly correlated with each other, partial correlations testing these hypotheses were also computed and are presented in Table 6. All correlations with Loss have Gain partialled out, and all correlations with Gain have Loss partialled out. These partial correlations also provide no support for Hypothesis 3.

Hypothesis 4

The hypothesis that commitment to the avoidance of loss in general is related to the number of cognitions generated concerning stimulus elements related to loss for the individual was tested by computing the correlation between the score on the Loss scale of the Thought Survey and the number of cognitions reported concerning stimulus elements related to loss for the individual. The hypothesis that commitment to the achievement of gains is related to the number of cognitions generated concerning stimulus elements related to gain for the individual was tested by computing the correlation between the Gain score on the Thought Survey and the number of cognitions reported concerning stimulus elements related to gain for the individual. These correlation coefficients are presented in Table 7.

Table 5.--Correlations Between Scale Scores on the Thought Survey and Inclusion of Stimulus Elements in the Image Description

	Score on Loss Scale of Thought Survey	Score on Gain Scale of Thought Survey
Inclusion of same-sex acquaintance in image description when same-sex relations are related to Loss for the subject	.03 (n = 33)	-.08 (n = 33)
Inclusion of same-sex acquaintance in image description when same-sex relations are related to Gain for the subject	.17 (n = 74)	.10 (n = 74)
Inclusion of opposite-sex person in image description when opposite-sex relations are related to Loss for the subject	a (n = 7)	a (n = 7)
Inclusion of opposite-sex person in image description when opposite-sex relations are related to Gain for the subject	-.09 (n = 102)	-.02 (n = 102)
Inclusion of 10-point quiz in image description when academic achievement is related to Loss for the subject	-.22 (n = 44)	-.28 (n = 44)
Inclusion of 10-point quiz in image description when academic achievement is related to Gain for the subject	.05 (n = 62)	.04 (n = 62)

Note. Underscored coefficients were hypothesized to be significantly positive.

[a]Uninterpretable due to the small number of subjects.

Table 6: Partial Correlations Between Scale Scores on the Thought Survey and Inclusion of Stimulus Elements in the Image Description

	Score on Loss Scale of Thought Survey	Score on Gain Scale of Thought Survey
Inclusion of same-sex acquaintance in image description when same-sex relations are related to Loss for the subject	<u>-.11</u> (<u>df</u> = 29)	.13 (<u>df</u> = 29)
Inclusion of same-sex acquaintance in image description when same-sex relations are related to Gain for the subject	-.15 (<u>df</u> = 69)	<u>.01</u> (<u>df</u> = 69)
Inclusion of opposite-sex person in image description when opposite-sex relations are related to Loss for the subject	<u>a</u> (<u>df</u> = 4)	a (<u>df</u> = 4)
Inclusion of opposite-sex person in image description when opposite-sex relations are related to Gain for the subject	.11 (<u>df</u> = 97)	<u>-.02</u> (<u>df</u> = 97)
Inclusion of 10-point quiz in image description when academic achievement is related to Loss for the subject	<u>.04</u> (<u>df</u> = 40)	.19 (<u>df</u> = 40)
Inclusion of 10-point quiz in image description when academic achievement is related to Gain for the subject	-.02 (<u>df</u> = 57)	<u>-.03</u> (<u>df</u> = 57)

<u>Note</u>. Underscored coefficients were hypothesized to be significantly positive. All correlations with Loss have Gain partialled out, and all correlations with Gain have Loss partialled out.

[a]Uninterpretable due to the small number of subjects.

Table 7: Correlations Between Scale Scores on the Thought Survey and the Number of Thoughts Reported Concerning Stimulus Elements

	Score on Loss Scale of Thought Survey	Score on Gain Scale of Thought Survey
Number of thoughts reported concerning the same-sex acquaintance when same-sex relations are related to Loss for the subject	.05 (n = 33)	.16 (n = 33)
Number of thoughts reported concerning the same-sex acquaintance when same-sex relations are related to Gain for the subject	.19 (n = 72)	.02 (n = 72)
Number of thoughts reported concerning the opposite-sex person when opposite-sex relations are related to Loss for the subject	a (n = 7)	a (n = 7)
Number of thoughts reported concerning the opposite-sex person when opposite-sex relations are related to Gain for the subject	.04 (n = 100)	.30** (n = 100)
Number of thoughts reported concerning the 10-point quiz when academic achievement is related to Loss for the subject	.16 (n = 44)	-.03 (n = 44)
Number of thoughts reported concerning the 10-point quiz when academic achievement is related to Gain for the subject	-.07 (n = 60)	-.06 (n = 60)

Note. Underscored coefficients were hypothesized to be significantly positive.

[a]Uninterpretable due to the small number of subjects.

*$p < .05$.

**$p < .01$.

In order to more clearly separate the effects of Loss and Gain, since they are highly correlated with each other, partial correlations testing these hypotheses were also calculated and are presented in Table 8. All correlations with Loss have Gain partialled out, and all correlations with Gain have Loss partialled out.

In general, Hypothesis 4 was not supported by this analysis. This hypothesis was clearly not supported for the stimulus element of the same-sex acquaintance or the stimulus element of the 10-point quiz. For the stimulus element of the member of the opposite sex, the predicted significant correlation between the Gain scale of the TS and the number of thoughts reported was found for subjects to whom opposite-sex relationships were perceived as related to gain. Since so few subjects perceived opposite-sex relationships as related to loss ($n = 7$), however, the corresponding correlation between Loss and the number of thoughts reported concerning the members of the opposite sex for subjects to whom opposite-sex relationships were related to loss is uninterpretable.

Hypothesis 5

The hypothesis that the commitment to the incentive of avoiding loss is related to the presence of depressive, irrational thoughts in response to an ambiguous image was tested by computing the Pearson product-moment correlation between the Loss scale of the TS and the reporting of irrational-depressed thoughts in response to the imagined scene. The computed correlation of .20 ($p < .05$), which, when corrected for attenuation, gives an estimated true correlation of .32,

Table 8: Partial Correlations Between Scale Scores on the Thought Survey and the Number of Thoughts Reported Concerning Stimulus Elements

	Score on Loss Scale of Thought Survey	Score on Gain Scale of Thought Survey
Number of thoughts reported concerning the same-sex acquaintance when same-sex relations are related to Loss for the subject	<u>-.11</u> (<u>df</u> = 29)	.18 (<u>df</u> = 29)
Number of thoughts reported concerning the same-sex acquaintance when same-sex relations are related to Gain for the subject	.21* (<u>df</u> = 69)	<u>-.09</u> (<u>df</u> = 69)
Number of thoughts reported concerning the opposite-sex person when opposite-sex relations are related to Loss for the subject	<u>a</u> (<u>df</u> = 4)	a (<u>df</u> = 4)
Number of thoughts reported concerning the opposite-sex person when opposite-sex relations are related to Gain for the subject	-.12 (<u>df</u> = 97)	<u>.32</u>** (<u>df</u> = 97)
Number of thoughts reported concerning the 10-point quiz when academic achievement is related to Loss for the subject	<u>.22</u> (<u>df</u> = 40)	-.19 (<u>df</u> = 40)
Number of thoughts reported concerning the 10-point quiz when academic achievement is related to Gain for the subject	-.05 (<u>df</u> = 57)	<u>-.01</u> (<u>df</u> = 57)

<u>Note</u>. Underscored coefficients were hypothesized to be significantly positive. All correlations with Loss have Gain partialled out, and all correlations with Gain have Loss partialled out.

[a]Uninterpretable due to the small number of subjects.

*$\underline{p} < .05$.

**$\underline{p} < .01$.

provides empirical support for this hypothesis. With Gain partialled out to separate the effects of Loss and Gain, the correlation remains the same. This estimated true correlation is probably an underestimate of the true correlation since the interrater reliability of the irrational-depressed thoughts variable used to compute the correction for attenuation is an overestimate of that measure's reliability.

The relationship between the Loss scale and the reporting of irrational-depressed thoughts appears stronger for females than for males, for when taken separately the correlation for women is .23 ($p < .05$) and for men is .18 ($p > .05$). A test for differences between correlations, however, shows that the difference between the correlations for men and women is not significant.

Hypothesis 6

The hypothesis that the reporting of depressive-irrational thoughts is related to the increase in depressive affect was tested by computing the Pearson product-moment correlation coefficient between the presence of irrational-depressed thoughts reported in response to the image and the increase in the Depression Adjective Check List score following the image. The computed correlation of .20 ($p < .05$), which when corrected for attenuation estimates a true correlation of .40, lends support to this hypothesis. This estimate of the true correlation is probably an underestimate of the true correlation since the interrater reliability of the irrational-depressed thoughts variable used to compute the correction for attenuation is an overestimate of that measure's reliability. Here again, the relationship seems stronger

for females than for males, with women showing a correlation of .34 ($p < .01$) and men showing a correlation of -.16 ($p > .05$). This difference between the correlations for men and women is significant at the .001 level.

Hypothesis 7

The hypothesis that there is a significant positive relationship between life stress and depression when the tendency to distort in a depressive manner is low but not when the tendency to distort in a depressive manner is high was tested by dividing the sample approximately into quartiles on each of the cognitive distortion measures and computing conditional correlations between the Life Events Inventory and the Beck Depression Inventory at the four levels of depressive distortion. Since the three different distortion measures (the Story Completion Test, Cognitive Response Test, and the Dysfunctional Attitude Scale) were not strongly correlated with each other, the results from each of these measures are presented separately in Table 9.

A significant positive correlation was found between the BDI and the LEI at the lowest level on the SCT, and no significant positive correlation was found at the highest level of the SCT, which would appear to support the hypothesis. This could be a misleading conclusion, however, since the hypothesis implies that there will be a monotonic relationship between the correlations, with the correlation between the BDI and the LEI decreasing as the score on the SCT increases. Examination of Table 5 reveals that such a relationship was not found, and an overall test of the differences between the

Table 9: Correlations Between the Beck Depression Inventory and the Life Events Inventory for Subjects at Varying Levels on Three Distortion Measures

Measures of Depressive Cognitive Distortion	Levels of Depressive Cognitive Distortion			
	1st Quartile (lowest 25%)	2nd Quartile	3rd Quartile	4th Quartile (Highest 25%)
Sentence Completion Test	.38** (n = 40)	-.08 (n = 27)	.27 (n = 24)	-.05 (n = 32)
Dysfunctional Attitude Scale	.12 (n = 30)	.27 (n = 36)	.13 (n = 28)	-.01 (n = 29)
Cognitive Response Test	.29 (n = 32)	.18 (n = 33)	-.07 (n = 29)	.32* (n = 29)

Note. Due to the distribution of scores, it was not possible to divide the sample into exact quartiles.

*p < .05.

**p < .01.

conditional correlations (Edwards, 1973, p. 185) revealed no overall significant difference among the conditional correlations.

Neither of the other two distortion measures provided clear support for this hypothesis either. None of the conditional correlations at varying levels of the DAS was significant at the .05 level, while the highest correlations between the BDI and the LEI were found at the highest and the lowest levels of the CRT. Overall tests of the difference between the conditional correlations revealed no significant differences for either of these measures. Analyses for female and male subjects separately showed somewhat different patterns of results (Table 10), none of which was consistent with the hypothesis.

Since these findings were not consistent with those of Hammen (1978), the same statistical analysis as was used in the Hammen study was conducted to determine whether the difference in statistical methods accounted for the discrepancies in the findings. An analysis of variance performed on the number of depressive distorted responses, with factors of sex, high and low life-change units (median split), and high and low depression level, did not show a significant interaction between life-change scores and depression level as had been found by Hammen. Therefore, it was concluded that statistical procedures did not account for the failure to replicate these findings.

Since the SCT, the CRT, and the DAS have all been presented in the literature as measures of irrational and distorted thoughts and beliefs, the Pearson product-moment correlations were computed among these measures to determine whether in fact they seemed to be measuring similar concepts. The correlation between the SCT and the CRT

Table 10: Correlations Between the Beck Depression Inventory and the Life Events Inventory at Varying Levels on Three Distortion Measures (Sexes Considered Separately)

Measures of Depressive Cognitive Distortion	Levels of Depressive Cognitive Distortion							
	1st Quartile (lowest 25%)		2nd Quartile		3rd Quartile		4th Quartile (highest 25%)	
	Females	Males	Females	Males	Females	Males	Females	Males
Sentence Completion Test	.40* (n=30)	.35 (n=10)	-.18 (n=17)	.18 (n=10)	.59** (n=14)	.14 (n=14)	-.26 (n=14)	-.23 (n=14)
Dysfunctional Attitude Scale	-.07 (n=19)	.33 (n=12)	.59** (n=20)	-.15 (n=11)	.06 (n=18)	-.09 (n=12)	.09 (n=18)	-.14 (n=13)
Cognitive Response Test	.26 (n=19)	.34 (n=13)	.42* (n=17)	.23 (n=10)	-.12 (n=21)	-.19 (n=12)	.48* (n=19)	.15 (n=13)

Note. Due to the distribution of scores, it was not possible to divide the sample into exact quartiles.

*$p < .05$.

**$p < .01$.

was .31, the correlation between the DAS and the CRT was .18, and the correlation between the SCT and the DAS was .11. Even when corrected for attenuation, the estimated correlation between the SCT and the CRT would be .49, the estimated correlation between the DAS and the CRT would be .22, and the estimated correlation between the SCT and the DAS would be .16. Although these three measures may all be assessing important aspects of depressive thinking, the fact that there is little shared variance among these measures challenges their validity as equivalent measures of the thought processes which predispose people to depression.

DISCUSSION

The increasing popularity of cognitive theories of psychopathology has led, in recent years, to the rapid growth of the body of research on cognitive factors involved in depression. Some of this research has produced conflicting findings, especially concerning the role of cognitive distortion in depression. This study investigates a theory of depression, derived from the work of Aaron Beck (1976) and Eric Klinger (1977), that a primary commitment to the incentive of avoiding loss leads (through the processes of attention, recall, and thought) to the cognitive distortions which in turn produce and maintain depression. In this study, the commitment to the avoidance of loss was, in fact, found to be related to the signs and symptoms of depression. The study also revealed that people with a high commitment to the incentive of avoiding loss were more likely to report irrational-depressed thoughts in response to an imagined scene, and that the experience of these thoughts did tend to lead to an increase in depressive mood. The attempt to delineate the specific processes of attention, recall, and thought which had been hypothesized to lead to the irrational-depressed thoughts was not successful, and the controversy over whether depressed people are depressed because they distort reality or because they fail to distort reality in a positive manner has not been resolved by this study. Further research is needed to specify precisely how a primary commitment to the avoidance of loss

might contribute to the development of irrational-depressed thoughts and the maintenance of depression and to determine whether the concept of increased attention, recall, and thought about stimuli related to loss can be used to explain how depressives may be especially accurate in judging the contingencies in certain objective tasks while at the same time distorting their interpretations of reality in a depressive manner.

The hypothesis that a strong commitment to avoiding loss is related to the state of depression was clearly supported by this study. No support was found, however, for the corresponding hypothesis that since a primary commitment to avoiding loss would overshadow other incentives, such as the incentive of achieving gains, commitment to the incentive of achieving gains would be negatively related to depression. This indicates that, at least within the range of depression that existed in this sample, even a strong commitment to the avoidance of loss does not preclude the simultaneous existence of other incentives, including the incentive of achieving gains. Perhaps it is only at the extreme levels of commitment to the incentive of avoiding loss (which were not widely represented in this sample) that commitment to other incentives is drastically reduced.

It is also possible that the incentive of avoiding loss and the incentive of achieving gains are more complicated than the Thought Survey was able to assess. Klinger (1977) theorizes that the extent to which a given incentive will be influential in affecting attention, retention, and thought will be determined by the importance of the incentive to the person, the amount of time left before the

incentive will either be attained or not attained, the perceived difficulty of attaining the incentive, and the probability that the incentive will be attained. A depressed person may have an average number of thoughts about achieving gains, but if this incentive seems relatively unimportant or unlikely to occur in the foreseeable future, the impact of this incentive may be diminished. These four factors may affect the relationship between commitment to the incentive of achieving gains and depression. Perhaps a more comprehensive measure which includes these four factors could assess the total current influence of both the incentive of avoiding loss and the incentive of achieving gain and could be used to test whether the actual overall impact of the incentive of achieving gain is in fact negatively related to depression.

The hypothesis that commitment to the avoidance of loss is related to the recall of stimuli related to loss for the individual was not supported by the data, nor was its counterpart hypothesis that commitment to the achievement of gain is related to the recall of stimuli related to gain for the individual. This finding differs from the findings of Klinger et al. (1976) that people do recall most those stimuli related to their incentives. It seems possible that the stimulus scene used in this study was not complex enough to provide an adequate test of this hypothesis. There were only three major stimulus elements in the scene, and since most subjects were able to remember most or all of these elements, there was a strong ceiling effect. In Klinger's experiments, a dichotic listening task was used which provided simultaneous but different auditory stimuli to both ears,

requiring that the subject attend to only one of the two sets of stimuli at any given moment. In the current study, the stimuli in the imagined scene were not only simple enough so that the subject could attend to each element consecutively, but they were presented in the form of a visual image which allowed the subject to attend to more than one element at the same time. Since the visual processing system is capable of representing many stimuli concurrently, and the three stimulus elements which were included in the hypotheses were each highly salient in the imagined scene, it is not surprising that all three aspects of the situation were typically attended to and remembered regardless of the subjects' current incentives. A more complicated imagery scene where the complexity of the situation would exceed the capacity of the perceptual systems being used would require selective attention and thus would provide a more powerful test of this hypothesis. The ideal stimulus situation would approximate the complexity of a real-life situation. For example, this could be achieved by creating a controlled stimulus situation in the waiting room of the experiment by arranging the specific sights, sounds, and even smells and tactile stimulation that the subject comes into contact with while waiting for another phase of the experiment to begin. Even using imagery, the stimulus situation could be made much more complex and lifelike by presenting a video-taped scene for the subjects to imagine themselves in. Then, by assessing the recall of as many of the aspects of the situation as possible, it would be more likely that variations in recall would be found among subjects and

that if relationships exist between recall and subjects' current incentives, they could be detected.

In general, the hypothesis that commitment to avoiding loss is related to the number of thoughts concerning elements related to loss and the hypothesis that commitment to achieving gain is related to the number of thoughts concerning stimuli related to gain were not supported by this study. For the stimuli concerning same-sex peer relationships and academic achievement, no support at all was found for these hypotheses. Even the support provided for the stimuli concerning opposite-sex relationships is difficult to interpret. A significant relationship was found between commitment to achieving gain and the number of thoughts about the opposite-sex person in the scene for subjects to whom opposite-sex relationships were related to gain. Opposite-sex relationships were related to loss for so few subjects ($\underline{n}$ = 7), however, that the hypothesis that commitment to avoiding loss is related to the number of thoughts about the opposite-sex person for subjects to whom opposite-sex relationships are related to loss could not be given an adequate test. These hypotheses were therefore supported by only one out of the six predicted correlations. In addition, one of the relationships that was not hypothesized to exist was found to be significant. It therefore seems unjustified to make conclusions on the basis of this one correlation alone.

The lack of subjects to whom opposite-sex relationships were related to loss may be unique to a predominantly freshman college-student population. Assuming that one has to have something in order to make a commitment to avoid losing it, it may be that freshmen are

focused on gain concerning opposite-sex relationships simply because they have not developed many opposite-sex relationships yet and are therefore not concerned about losing them. Perhaps a different, older, subject population would provide a more equal balance between loss and gain in regard to opposite-sex relationships and would allow for a more adequate test of these hypotheses.

The fact that these hypotheses received more support for stimuli concerning opposite-sex relationships than for stimuli concerning either same-sex peer relationships or academic achievement could be explained to some extent by developmental theories such as that of Erikson (1963). Since most of the subjects in this study fit into the category of late adolescence, developmental theorists would argue that the most salient concerns of this age group would be in regard to opposite-sex relationships unlike younger people, who would be expected to be more focused on same-sex peer relationships, or older people, who would be expected to be more focused on career concerns. Thus, it may be that these hypotheses hold most strongly for stimuli within the content areas most salient in the person's life at any one point in time.

The fact that the results were not consistent with the findings of Klinger et al. (1976) for the hypotheses concerning both recall and number of thoughts could be attributed to the differences in assessment procedures. Klinger used a series of structured interviews, self-report measures, and a daily personal activities log to assess each subject's commitment to various goals, while the present study used the Thought Survey to assess each subject's commitment to

six specific goals. Perhaps Klinger's more comprehensive assessment procedures produced a more reliable or valid measure of commitment to goals. With only three stimulus elements to recall, the reliability of the recall measure was undoubtedly low, and the test of the hypothesis concerning thoughts relied on subjects' estimates of the number of thoughts they had had concerning each stimulus element. The limited reliability of these estimates also may have decreased the power of this test.

The hypothesis that a commitment to the incentive of avoiding loss is related to the presence of irrational-depressed thoughts was supported by the results of this study. Those subjects who, before imagining the scene, scored as having a high commitment to the avoidance of loss did tend to report having irrational-depressed thoughts while imagining the scene more often than did subjects who showed a lower commitment to the avoidance of loss. This relationship was found to be significant at the .05 level despite the poor reliability of the ratings of the presence of irrational-depressed thoughts.

Empirical support was also found for the hypothesis that the presence of irrational-depressed thoughts is related to a subsequent increase in depressed affect. Subjects who reported thoughts which could be categorized as irrational-depressed showed a corresponding increase in depressive mood after the imagined scene. This lends support to Beck's cognitive theory of depression, since in a relatively realistic situation, subjects who interpreted ambiguous cues in a way that led to irrational-depressed thoughts did become more depressed in mood.

Although the correlation relating the commitment to avoiding loss with the presence of irrational-depressed thoughts and the correlation relating the presence of irrational-depressed thoughts to an increase in depressed affect were statistically significant, the actual size of the correlations was not large and could not account for a large proportion of the variance. The strength of these relationships may have been attenuated since the ambiguity of the imagined scene had been inadvertently reduced by the specification in the imagery instructions that the scene was occurring on a spring day. The potential impact of this one element was not obvious to the principal investigator who designed this study during summer and fall, but when the study was conducted in the middle of a Michigan winter, the mention of spring seemed to have had a strong effect on the subjects. Many subjects focused on the positive aspects of the spring weather so that what had been intended as an ambiguous scene actually became strongly skewed toward the positive. The positive valence of the scene may have served to decrease the number of irrational-depressed thoughts experienced by the subjects and to decrease the power of the paradigm. People get depressed even in the spring following a Michigan winter, and a person with a strong tendency to distort in a depressive manner could interpret even an objectively positive scene in a depressive fashion. Thus, even using a somewhat positive scene it would be expected that a strong commitment to avoiding loss would be related to the presence of irrational-depressed thoughts. The use of a less than completely ambiguous scene, however, provided an especially stringent test of the hypotheses, and it seems possible

that a more ambiguous scene would have produced stronger correlations.

Some of the measurement problems in this study also may have contributed to weaker correlations than otherwise would have been found. The problems many experimenters had in eliciting detailed and accurate reports of the thoughts that the subject experienced while imagining the scene help to illustrate some of the problems with cognitive assessment that have yet to be resolved. Although much theorizing has been done about the role of cognitive variables in psychopathology, and outcome research has claimed to document the efficacy of cognitive therapy approaches, most of these therapy-outcome studies do not include any actual assessment of the cognitive variables. Mahoney (1977) describes the development of reliable methods for assessing cognitive phenomena as one of the major tasks facing the cognitive-learning perspective in psychotherapy. Nisbett and Wilson (1977) raise questions about how much direct introspective access people actually have to their own cognitive processes and suggest that when people attempt to report on their cognitive processes they do so less on the basis of true introspection than on the basis of a priori causal theories about the ways they expect themselves to think. Many subjects in this study claimed to not have been aware of having any thoughts at all and had difficulty understanding what they were being asked to report. Even when people are aware of their thoughts, the verbal self-report of these thoughts is subject to many outside influences such as social desirability and demand characteristics. Some subjects seemed to be censoring the reports of their thoughts,

and others seemed to be desperately trying to figure out what they were "supposed to" have thought. Using clinically trained interviewers, or using refined interview training techniques, including empathy training, so that interviewers would be better equipped to put the subjects at ease, might be helpful in obtaining more accurate and detailed accounts of the cognitions experienced by the subjects.

The difficulty maintaining reliability on the ratings of irrational-depressed thoughts also may have attenuated the size of the correlations found. This variable was scored directly from the audio-taped interviews, and the richness of the data from the verbal reports made reliable coding of the data difficult. Especially given the fact that few irrational-depressed thoughts were reported, it was difficult for the experimenters to keep their attention focused on the task. Some experimenters, discouraged by the low number of irrational-depressed thoughts they were finding, seemed to stretch the rules of the coding manual in order to find more thoughts to score. Other experimenters seemed to be lulled by the lack of scorable responses into missing scorable responses when they did occur. Scoring from written transcripts of the interviews would probably have made it easier to maintain reliability. This is supported by the fact that these same experimenters were able to maintain adequate reliability when scoring the Cognitive Response Test, which uses the same scoring rules as used for scoring the interviews, but was scored from written responses.

Despite these measurement difficulties, the following two hypotheses were supported by the data: commitment to the avoidance of loss

was related to the presence of irrational-depressed thoughts, and the presence of irrational-depressed thoughts was related to the increase in depressive affect. Although correlation does not necessarily imply causality, the time sequence of the variables does narrow down the possible patterns of causality. Since the irrational-depressed thoughts occurred in response to a scene which was imagined after the commitment to avoiding loss had been measured, the thoughts obviously could not have caused the commitment to avoiding loss. Thus, either the commitment to avoiding loss caused the irrational-depressed thoughts to occur (either directly or indirectly) or a third variable caused them both. Similarly, the increase in depressive affect following the scene could not have caused the irrational-depressed thoughts to occur during the scene, so either the thoughts caused the change in affect (directly or indirectly) or a third variable caused them both.

Sex differences were found in the tests of these two hypotheses, with stronger relationships between the variables being found for females than for males. Epidemeological studies have long acknowledged sex differences in depression, with women consistently reporting depression more frequently than men (Weissman & Klerman, 1977). A study by Hammen and Padesky (1977) found that, among college students, there were no sex differences in the total degree of depression reported, but there were significant sex differences in the patterns of the expression of depressive symptoms. The results of the current study support the findings of Hammen and Padesky, since no significant differences were found between the sexes on total depression scores,

yet sex differences were found in the tests of the hypotheses. Thus, although the total Beck Depression Inventory scores for men and women were similar, women showed a significantly stronger relationship between the presence of irrational-depressed thoughts and an increase in depressed affect than did men. Since women do seek clinical treatment for depression more often than men, and Beck's theory of depression was derived from clinical work, it seems possible that the model of depression presented here is more applicable to women than to men. It also is possible that this model is equally applicable to both women and men but that men, given the "rational" male sex role in our society, are less likely to openly report the irrational-depressed thoughts they have had than are women. Further research is needed to delineate how the patterns of depression may differ between men and women, how cognitive assessment may differ between the sexes, and whether separate theories of depression for women and men are warranted.

The issue of generalizability of results extends beyond sex differences. Since this study was conducted on an undergraduate population, the generalizability of the findings is limited. Even though 31% of the sample showed at least mild depression as measured by the Beck Depression Inventory, this was clearly not a clinically depressed sample, and the results of the study would need to be replicated on a sample of clinically depressed patients before generalizations to clinical samples would be merited. The successful tests of these hypotheses within such a relatively narrow range of depression is

encouraging, however, and indicates potential for further research in this area.

The hypothesis that life stress is significantly related to depression when the tendency to distort in a depressive manner is low but not when this tendency is high did not receive clear empirical support. Although the data from the Sentence Completion Test appear to support the hypothesis as it was stated, the implied linear relationship with the correlation between life stress and depression decreasing as cognitive distortion increases was not found for any of the three distortion measures used. In addition, the interaction between life stress and depression found by Hammen (1978) was not replicated in this study.

One factor that distinguished this study from the Hammen (1978) study was that the distortion measures were administered to the subjects in a separate session from the depression measure, and often several days elapsed between sessions. The BDI is designed to be sensitive to changes in severity of depression over time, so that changes in depression level over the few days' time could have changed the relationships that had been predicted.

Another important finding of this study was that little similarity existed between the three measures of depressive thought processes. Although theoretical discussions of the measures portray these tests to be designed to assess similar concepts, in the present study these measures showed very different patterns of results and they did not correlate strongly enough with each other to be considered equivalent. The small amount of shared variance among these

measures is consistent with a study by Blaney, Behar, and Head (1980) which found that two measures of depressive cognitions were not closely enough related to each other to be viewed as equivalent. In addition, the SCT showed less than adequate internal consistency and its authors (Krantz & Hammen, 1979) acknowledge that the measure was based on a very heterogeneous construct of distortion. The three measures used in this study appear to be measuring different variables, all of which may be important aspects of cognitive distortion, but it is not clear what these variables are and how they differ from each other. The format of the measures may differ sufficiently to account for much of the difference among the measures. While the Cognitive Response Test elicits direct and specific thoughts, and the Dysfunctional Attitude Scale assesses the endorsement of general attitudes and beliefs, the Sentence Completion Test measures thoughts which fit into Beck's (1976) categories of cognitive distortion. While the CRT and the SCT consist of thoughts stated in the first person, the DAS has some beliefs stated in the first person and other beliefs stated in the third person. Since both Beck (1976) and Ellis (1962) stress the importance of self-statements (the things one tells oneself about oneself), and since people may hold very different standards for other people than they hold for themselves, this distinction between first and third person could be a critical one. The issue of social desirability also differs among these measures, with the CRT appearing to be the least subject to the effects of social desirability and the DAS appearing to be the most subject to these effects. Further research specifying the differences and similarities among these measures may

be useful in clarifying the different concepts of automatic thoughts, underlying assumptions and beliefs, and cognitive distortions. In the meantime, however, the concept and the measurement of depressive cognitive distortion may not be delineated sufficiently to carry out a decisive test of the relationship between life stress and depression at varying levels of cognitive distortion.

To summarize, the present study represents a preliminary attempt to investigate the theory that an overcommitment to the incentive of avoiding loss in general leads to the distorted thinking that in turn tends to produce and maintain depression. When asked to imagine an ambiguous, everyday situation, subjects who were highly committed to the incentive of avoiding loss did tend to report having irrational-depressed thoughts during the scene, and subjects who reported having such thoughts tended to report increased depressive affect following the scene. While this theory has therefore received some support in this study, the specific cognitive processes by which an overcommitment to the avoidance of loss may lead to depressive, distorted thinking still remain unclear, and the controversy over whether people are depressed because they distort more or because they distort less than normal people remains unresolved. Further research using improved methods of cognitive assessment could help to determine more clearly whether in fact increased attention, recall, and thought about aspects of situations related to loss leads to the distorted thinking which then leads to depression. If in fact this theory is supported by further research, there could be many implications for the prevention and treatment of depression. The exploration of clients' commitment

to various incentives could be incorporated into the cognitive therapy program outlined by Beck et al. (1979), and learning histories could be discussed in order to help clients understand how they learned to make a primary commitment to the incentive of the avoidance of loss. The process of putting this incentive into perspective and developing a variety of other, more productive incentives could become an integral part of the therapy process. Preventative approaches could include general education about effective ways to deal with loss without becoming overly committed to its avoidance, as well as helping educators and people in various community agencies to identify children who may be reacting to serious losses early in their lives by selectively focusing on the loss-related aspects of their daily lives. Thus, further investigation of this theory of depression could not only improve the understanding of the phenomena of depression, but could eventually lead to more efficient and effective approaches to the prevention and control of depression.

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APPENDICES

APPENDIX A

PERSONAL DATA SHEET

APPENDIX A

PERSONAL DATA SHEET

24. How old are you?

A. Less than 18
B. 18 to 21
C. 22 to 30
D. 31 to 50
E. Over 50

25. What is your sex?

A. Female
B. Male

26. What is your marital status?

A. Single
B. Married
C. Separated
D. Divorced
E. Living with someone
F. Widowed
G. Remarried

27. How many times did your family move before you completed high school?

A. They didn't move
B. One time
C. Two to three times
D. Four to six times
E. More than six times

28. How old were you at the first family move that you can remember clearly?

A. We didn't move
B. Three or younger
C. Four to six
D. Seven to eleven
E. Twelve or older

29. Who were you raised by?

A. Both biological parents
B. Mother, or mother and stepfather
C. Father, or father and stepmother
D. Adoptive parents or foster parents
E. Other relatives

30. If your parents were divorced or separated, how old were you when this first happened?

A. They didn't divorce or separate
B. Three or younger
C. Four to six
D. Seven to eleven
E. Twelve or older

31. If your parents were divorced or separated, who did you live with following the divorce or separation?

A. They didn't divorce or separate
B. Lived with mother
C. Lived with father
D. Lived with mother some of the time and father some of the time
E. Lived with relatives, foster parents, or others

32. If your mother has died, how old were you when it happened?

A. She hasn't died
B. Three or younger
C. Four to six
D. Seven to eleven
E. Twelve or older

33. If your father has died, how old were you when it happened?

A. He hasn't died
B. Three or younger
C. Four to six
D. Seven to eleven
E. Twelve or older

34. How happy was your childhood?

A. Overall, quite happy
B. Fairly happy
C. Neither happy nor unhappy
D. Fairly unhappy
E. Overall, quite unhappy

35. Have you ever sought psychotherapy or counseling for help with personal problems?

A. No, I have never sought therapy
B. Yes, I have tried to get into therapy, but never actually started therapy
C. Yes, I was in therapy for 1-3 sessions
D. Yes, I was in therapy for more than three sessions
E. Yes, and I am currently in therapy

36. Do you feel that you have experienced many losses in your life?

A. No, not particularly
B. Some, but not a great number
C. Yes, many
D. Yes, very many

37. How stressful do you feel that the past six months has been for you?

A. Not very stressful at all
B. Slightly stressful
C. Some stress, but not a great deal
D. Quite stressful
E. Very stressful

APPENDIX B

THOUGHT SURVEY

APPENDIX B

THOUGHT SURVEY[1]

(Women's)

Instructions:

During the past 24 hours, how often have you thought, dreamed, daydreamed, worried, or wondered about the following topics?

Please mark the rating that represents your best estimate. Don't try to count the thoughts, daydreams, etc., one by one. The estimate that seems the most reasonable to you is probably accurate. Remember, we want to know how often you have thought, dreamed, daydreamed, worried, or wondered about these topics, not how often the event they refer to has happened.

Each of the topics refers to an event that could happen. For example, "Having my parents agree with a decision I've made." In rating how often you've thought about this, count only thoughts which refer to the event, not thoughts which refer to its opposite. For example, you would count thoughts such as "I hope they agree with my decision," or "I'm glad they agree with my decision." You would not count thoughts such as "I hope they don't disagree with me" or "I bet they won't agree with me." If a thought refers to both the event and its opposite (such as "I wonder if they will agree with me or disagree with me"), count it as referring to the event. Then, if there's a later question which asks about the opposite event, count it then too. If you're not sure whether to count a thought or not, do whatever seems most reasonable to you.

Note: In this questionnaire, assume that all the people referred to are about your own age.

Use the following rating scale:

1. Not at all.
2. One to three times in the past 24 hours.
3. Four to nine times (about once every 3-6 hours on the average).
4. Ten to 17 times (about once every 1-2 hours on the average).
5. More than 17 times (about once an hour or more often).

---

[1]This is the women's form of the Thought Survey. For male subjects, the gender of the people referred to was reversed for each item.

During the past 24 hours, how often have you thought, dreamed, daydreamed, worried, or wondered about the following topics?

1. Not at all.
2. One to three times.
3. Four to nine times (about every 3-6 hours on the average).
4. Ten to 17 times (about once every 1-2 hours on the average).
5. More than 17 times (about once an hour or more often).

1. Being liked by men you know.
2. Understanding your classwork.
3. Being popular with men.
4. Not having enough space to yourself.
5. Being rejected by men.
6. Being popular with women.
7. Doing well on tests.
8. Having men be interested in knowing you.
9. Having others not respect your privacy.
10. Getting good grades.
11. Being invited to join female friends in an activity.
12. Not having enough room.
13. Getting bad grades.
14. Being unpopular with the women you know.
15. Doing well in college.
16. Not fitting in with the men you know.
17. Having people intrude on you.
18. Not getting along with the men you know.
19. Not doing as well as you want to in class.
20. Being accepted by men.
21. Not understanding lectures.
22. Being disliked by the men you know.
23. Doing as well as you want to in class.
24. Not having other people intrude on you.
25. Not understanding classwork.
26. Being crowded.
27. Understanding lectures.
28. Not being able to have time to yourself when you want to.

During the past 24 hours, how often have you thought, dreamed, daydreamed, worried, or wondered about the following topics?

1. Not at all.
2. One to three times.
3. Four to nine times (about every 3-6 hours on the average).
4. Ten to 17 times (about once every 1-2 hours on the average).
5. More than 17 times (about once an hour or more often).

29. Being unsuccessful in school.
30. Creating a bad impression with the men you know.
31. Not fitting in with female friends.
32. Being left alone when you want to be left alone.
33. Getting along with female friends.
34. Fitting in with the men you know.
35. Having people not interrupt what you're doing.
36. Being accepted by the women you know.
37. Being liked by the women you know.
38. Being able to have time to yourself when you want to.
39. Not having men be interested in knowing you.
40. Doing poorly on tests.
41. Having women be interested in knowing you.
42. Being rejected by the women you know.
43. Being left out of activities female friends are involved in.
44. Having other people respect your privacy.
45. Fitting in with other women.
46. Not getting along with the women you know.

During the past 24 hours, how often have you thought the following thoughts (or something very similar)?

1. Not at all.
2. One to three times.
3. Four to nine times (about every 3-6 hours on the average).
4. Ten to 17 times (about once every 1-2 hours on the average).
5. More than 17 times (about once an hour or more often).

47. "I could make some new female friends."
48. "I could do badly in class."
49. "My relationships with people might work out well."
50. "Some of the men I know may stop liking me."
51. "My friendships with women might improve."
52. "College might work out well for me."
53. "I could make some new male friends."
54. "My friendships with women might not last."
55. "I might be unsuccessful in school."
56. "Some new men might start liking me."
57. "I could lose some female friends."
58. "College might not work out for me."
59. "My friendships with men might improve."
60. "Some of the women I know may stop liking me."
61. "I could do well in class."
62. "My friendships with men might not last."
63. "My grades may be poor."
64. "Some new women may start liking me."
65. "I might be successful in school."
66. "My relationships with people might not work out."
67. "My grades may be good."
68. "I could lose male friends."

APPENDIX C

INSTRUCTIONS FOR SESSION 2

APPENDIX C

INSTRUCTIONS FOR SESSION 2

(Before subject arrives, organize the forms, check the tape recorder, see if the pencils are sharp.)

Hi, I'm _____, and I'll be conducting this part of the study.

(As you go in, put out Do Not Disturb sign, indicate where subject should sit, have them hang up their coat and put their stuff down, wait until they are settled. If the subject seems drunk or stoned or ill, ask them if they are or how they're feeling. If they are drunk, stoned or sick, ask them to see Jim in 39 Snyder to reschedule their appointment.)

As you may remember, this is a study of imagination, thoughts, and feelings, and we're going to be doing the imagination part of it today. I'm going to ask you to fill out some more questionnaires and then to imagine several everyday scenes. After that, we will talk about some of your reactions to the scenes. As in the first session, if there's any question you would rather not answer, just let me know and we'll go on to the next question. If you decide you don't want to complete the study, we can stop at any point.

I am going to want to tape-record our conversation when we discuss the scenes you imagine instead of taking the time to write it all down. I need to get your written permission to do that, so I'd like you to read and then sign this consent form. Do you have any questions?

(Give them the release form. After they've signed, you sign as witness.)

Here are a few questionnaires I'd like you to fill out. Fill your student number in on the answer sheet and then go ahead and complete the forms. If you have any questions, just let me know. By the way, what is your student number?

(Give them the Thought Survey for the appropriate sex and the Beck Inventory, in that order. Label an unused side of a tape with their student number, a slash, then your student number. While they fill out the forms, find the appropriate instruction tape and make sure it is rewound. Choose the male or female tape, depending on the sex of the subject. Choose "Tape for odd-numbered students" if their student number ends in an odd number. Choose "Tape for even-numbered students" if their student number ends in

an even number or zero. Once the instruction tape is rewound, make sure that their blank, labelled tape is also rewound. While they fill out their questionnaires, you can score Cognitive Response Test or do other available work in the room. When they have completed the forms, check to be sure they filled in their student numbers, then continue with these instructions.)

Now you'll be asked to imagine a scene. The instructions are tape-recorded, so I'll play them now. Just relax and follow the instructions.

(Play the appropriate tape. When the tape says "Open your eyes," stop the tape.)

Do you have any questions?

Here are a few more questionnaires.

(Give them the DACL-Form A and the Differential Emotion Scale-Form A, in that order. As they complete the questionnaires, fill their student number in on the DACL-Form C and the Differential Emotion Scale-Form B. When they've finished the forms, continue on.)

Now we'll imagine another scene.

(Continue playing the same instruction tape. When the tape says "Open your eyes," stop the tape.)

Now I'd like you to fill out a few more forms.

(Give them the DACL-Form C and the Differential Emotion Scale-Form B, in that order. As they fill in the forms, put the unused, labelled tape in the tape recorder.)

I'm now going to tape record our discussion of the last scene you imagined.

(Turn tape recorder on to record.)

I'm going to ask you some questions about the scene you just imagined. I'd like you to answer as completely and honestly as you can. Answer the questions in terms of the scene as you actually experienced it, without adding anything that occurs to you now. If you can't quite remember something, just say so--Don't try to figure out what you probably thought. If you'd rather not answer a question, just let me know and I'll go on to the next one.

(Jot down thoughts and appraisals as they are mentioned on the back of the release form, for later reference.)

Structured Interview

Image Description

Describe exactly the situation you were imagining. Only describe the situation--we'll talk about your thoughts and feelings in a minute.

Anything else?

Rate the vividness of the image on this scale (#1).

> (If, on any rating, the person lists more than one rating such as "It was a 2 or a 3," ask "If you had to choose one rating, which would it be?")

Rate how realistic the image was on this scale (#2).

Were some parts of the image more vivid or realistic than others? If so, which parts?

Did the vividness or realism of the image change while you were imagining the scene? If so, how? When?

Emotion

Describe your emotions and feelings while imagining the scene.

What other emotions and feelings did you experience while imagining the scene? Any others?

Did the emotions or feelings seem to be connected to any specific parts of the scene (if not obvious)?

What is the one word or phrase that best describes your overall emotional reaction while imagining the scene? (If they say more than one, ask them to pick just one.)

Cognition

> (Wherever possible and appropriate, get them to expand on their thoughts by saying, "Tell me more about that" or "Could you quote the actual thoughts?")

What thoughts went through your head while you were imagining the scene? Please try to "quote" the thought exactly, in the same words that you thought it in, rather than describing it.

Were there any other, related thoughts?

Did any of these thoughts occur more than once? If so, which ones? How many times did you think each one?

(If you had jotted down any thoughts earlier which they do not mention here, for each one say "Earlier you mentioned thinking _____. Tell me more about that." Restate their thoughts as exactly as possible. Restate each one that has not yet been mentioned in this section of the interview.)

(If they talk about a thought, ask them "What exactly was the thought?" or "Could you quote that exact thought for me?")

Some thoughts are hard to remember unless you really concentrate. Try to really concentrate and remember what other thoughts went through your head.

(Whenever they mention additional thoughts, ask "Did any of them occur more than once? If so, which ones? How many times did you think each one?"

Some thoughts are hard to remember even when you concentrate. I'd like you to start over and imagine the scene again from start to finish. Repeat out loud all the thoughts you remember as they happened.

How many thoughts did you have about the opposite-sex person on the bench across from you?

How many thoughts did you have about the same-sex acquaintance who didn't notice you?

How many thoughts did you have about the same-sex stranger who sat next to you?

How many thoughts did you have about the quiz?

Appraisals

(You do not need to jot down thoughts and appraisals for the rest of the interview.)

Now I'm going to ask some more detailed questions about some of the thoughts you mentioned. I'd like you to answer them in terms of how you felt and what you thought while imagining the scene.

(For each possible appraisal related to the opposite-sex person, the same-sex acquaintance not noticing them, the same-sex stranger who sat down next to them, or the quiz, ask the following:)

1. (Restate the appraisal) "You mentioned thinking. . . ."
2. (Clarify, unless it's already clear)
   a. (If outcome isn't clear) "How did you expect . . . [the situation] . . . to come out?"
   b. (If they mention wanting to do something or feel differently) "What did you expect to happen if you . . . [restate proposed action or feelings]. . . ?"

c. (If the subject's interpretation of the behavior, intentions, or motivations of others is not clear) "What did you think that meant?" or "What did you think was the reason that . . . [restate the behavior being interpreted or wondered about] . . . ?"

d. (If the thought is a question) "What did you think was the answer to . . . [restate question] . . . ?"

e. (When in doubt about what to ask the subject) "Tell me more about what you thought about . . . [restate unclear part] . . . ?"

3. What would . . . (the outcome) . . . have been like for you?

4. Rate how good or bad . . . (restate outcome or interpretation) . . . seemed, using this scale (#3).

5. a. (For present outcomes) Rate how certain you were that . . . (restate anticipated outcome) . . . (using Scale #4).

b. (For future outcomes) Rate how likely it seemed that . . . (restate anticipated outcome) . . . (using Scale #4).

c. (For future interpretations) Rate how likely it seemed that . . . (restate interpretation) . . . (using Scale #4).

c. (For future actions) Rate how certain you were that if you . . . (restate the action) then . . . (restate the anticipated outcome) . . . (using Scale #4).

6. (If appraisal is of an event or outcome which has already happened in the imagined scene, go on to item 7.)

(If outcome or event has not yet happened) Rate when it seemed that . . . (restate event or outcome) . . . would happen (using Scale #5).

7. Rate how important . . . (restate outcome or event) . . . would have been to you (using Scale #6).

8. (If appraisal is of event or outcome which has already happened in the imagined scene, skip to the next appraisal.)

(If appraisal is of event or outcome that has not yet happened):

(For negative outcomes) Rate how hard it would have been to avoid or prevent . . . (restate the outcome or event) . . . (using Scale #7).

(For positive outcomes) Rate how hard it would have been to get . . . (restate the outcome or event) . . . to happen (using Scale #7).

(Ask questions 1 trhough 8 in the Appraisals section for <u>each</u> appraisal.)

Realism of Responses

Rate how similar your thoughts and feelings were while imagining the scene to the way you would react in that real-life situation (using Scale #8).

Can you think of any ways your reactions were different?

(When finished, turn off tape recorder.)

O.K. Now we'll imagine one last scene.

(Change tapes back to the appropriate instruction tape and continue playing where you left off until it says "Open your eyes."

There's one last questionnaire to fill out.

(Give them the Participant's Evaluation Form and answer sheet.)

We're just about at the end of the study. Do you have any questions about it?

If you have any other questions about the study or if you'd like to discuss your experiences or emotional reactions further, Jim Pretzer or Barbara Fleming will be glad to meet with you.

(Hand them referral sheet.)

If you should have any feelings or reactions to this study which you're concerned about, or if any come up later on, Dr. Thornton who is listed on this sheet can help you to sort them out. Do you have any questions?

Please don't discuss this study with anyone who has not completed the study yet, since it might influence their responses during their second session.

How are you feeling now?

(If they're feeling o.k., sign their credit card, thank them for their participation, and say good-bye. If they express strong unpleasant feelings or concerns related to the study, encourage them to contact Dr. Thornton immediately. Mention that his phone number is on the sheet and suggest that they call from the Psych Research Building secretary's office. If that office is closed, call from the campus phone in the Synder Hall lobby or the pay phone in Baker Hall. If Dr. Thornton is not available immediately and the subject doesn't want to wait, have them try calling him at home or try to get in touch with Jim or Barb. If neither Dr. Thornton nor we are available and the subject doesn't want to wait, suggest that they call (1) the Listening Ear, (2) the DEC, or (3) the Counseling Center. As a final back-up, Ingham Community Mental Health Center has a 24-hour emergency service.

(After the subject has left, score the DACLs and the tape immediately.)

Guidelines to Answering Questions in Session 2

1. I refuse to have my interview tape-recorded.

   Ans.--It is a necessary part of running this study and we cannot use any of the information collected unless we also have the tape-recording. (If they still refuse, give them 1 credit for showing up, thank them, and send them home.)

2. Why does my tape have to be kept for 20 years?

   Ans.--Although this particular study will probably be finished by August, the results of the study may raise other important ideas for more research. Keeping the tapes for 20 years insures that there will be time to complete this study and that this information will be available in case it is useful for later follow-ups of this study.

3. I don't want my tape kept for 20 years.

   Ans.--Would you be more comfortable if it were kept only 5 years? (If so, change the release form and have them sign it.) (If not, ask "How long would you feel comfortable having the tape kept?" If they say less than 1 year, explain that that may not be long enough to complete the study and suggest the period of 1 year. If they agree to any time period of 1 year or more, change the release form and have them sign it. If they insist on less than 1 year, give them 1 credit for showing up, thank them, and send them home.)

4. Why do I have to be tape-recorded?

   Ans.--I couldn't possibly write down every single thing you say, and we do need all the information from the interview for this study.

5. Why do I have to close my eyes?

   Ans.--It helps to reduce distractions and makes it easier to clearly imagine the scene.

6. Do I have to close my eyes?

   Ans.--It would help to reduce distractions, but you don't have to close your eyes. If you would rather not, just stare at a blank spot on the wall as you imagine the scene.

7. Should I lean all the way back on the chair?

   Ans.--You can if you want to. The most important thing is that you feel comfortable.

8. What are you looking for? Give me more details about the questionnaires, scenes, the study in general, etc.

   Ans.--I can't really give you any more details now because it might influence the way you respond during the session. After this session you can discuss your questions either with me or with Jim Pretzer or Barbara Fleming.

9. I want to discontinue the study right now.

   Ans.--Would you be willing to imagine one last scene to help you relax before leaving? (If so, play the last scene. If not, don't argue with them.)

   (Then, skip to "If you have any other questions about the study or if you'd like to discuss your experiences or emotional reactions further. . . ." and finish the instructions. If they won't even let you do that, do be sure to hand them the referral sheet and sign their credit card, giving them 1 credit for each 1/2 hour they were there.

APPENDIX D

GUIDE FOR SCORING THOUGHTS

APPENDIX D

GUIDE FOR SCORING THOUGHTS

As you conduct the Structured Interview, you will jot down thoughts as they are mentioned. There are two types of thoughts which you do not need to write down: purely descriptive thoughts and thoughts solely describing emotions.

Purely descriptive thoughts include thoughts describing the physical situation as well as statements about the actions and behaviors which can be observed. Thus, thoughts like "The sun is shining," "There's a girl on that bench looking my way," or "He walked by and didn't say anything" are descriptive and would not need to be written down. Even thoughts that express opinions about purely physical characteristics need not be written down (such as "She looks kind of cute," "He was fat and ugly," "It was a beautiful day"). Any thoughts which go beyond pure physical description and express beliefs, expectancies, hopes, fears, opinions, etc. should all be written down. Examples of these are "The girl looks as though she likes me," "He purposely ignored me because he's a snob," "He looks nice and friendly," or "He's sitting there to try and annoy me." If you're not sure whether a thought is purely descriptive or not, write it down anyway. It is better to write down too many thoughts than to miss one.

Statements which describe only emotions would also not be written down or scored. These would include any simple statement of feeling (such as "I felt silly, happy, sad, lonely, disgusted, etc." or "The sun felt warm on my shoulders"). See the Differential Emotion Scale or the DACL forms for more examples of feeling words. However, just because a person starts a sentence with "I feel" does <u>not</u> mean that it is necessarily a statement of emotion. People often start with "I feel" and then go on to express thoughts (for example, "I feel that he should leave me alone" or "I feel that he probably thinks I'm pretty"). Any statement that goes beyond a simple statement of emotion and expresses any type of belief, expectancy, guess, hope, fear, opinion, etc. should be written down. Examples of these would be "He upsets me, so he should get out of here," "I like him because he seems to be interested in me," or "It's disgusting how he's trying to pick me up." If you're not sure whether the thought only describes an emotion or not, write it down anyway.

Although you write down thoughts throughout the first three sections of the interview, you will actually score only the Cognition and the Appraisals sections of the interview for thoughts. The thoughts you jotted down from the earlier parts of the interview (Image Description and Emotion sections) are important because if the subject doesn't mention each of these thoughts when you ask them about their thoughts,

you will have to remind them that "Earlier you mentioned thinking _____. Please tell me more about that." Thus, each thought you jotted down should be mentioned during the Cognition section of the interview, either spontaneously by the subject or when you remind them of it.

The actual scoring of thoughts involves counting the number of Irrational-Depressed and Irrational-Other thoughts which are mentioned during the Cognition and the Appraisal sections of the interview. As you listen to this section of the tape, keep a tally on the back of the release form of how many Irrational-Depressed and Irrational-Other thoughts are mentioned. Feel free to stop the tape at any point to give yourself time to decide which category the thought fits into. You will determine which thoughts fit into these categories by using the same Scoring Rules as used in scoring the Cognitive Response Test, referring back to these rules and their examples as necessary. Rather than scoring each thought as you did when scoring the CRT, however, here you will count only the number of Irrational-Depressed and Irrational-Other thoughts. It is still important to keep in mind the criteria for Rational and Non-scorable thoughts, however, even though you won't actually be counting them so that you don't accidentally include any Rational or Non-scorable thoughts in your tally of Irrational-Depressed or Irrational-Other thoughts. The relevant scoring rules will be summarized here. For more details and examples, see the Scoring Rules for the Cognitive Response Test.

Thoughts which show any one or a combination of the following violations of rational thinking are to be counted as Irrational.

1. Exaggeration refers to the process where any of the following occur:

   a. A conclusion is drawn when evidence is lacking or actually contrary to the conclusion. For example, "The guy looks at me and smiles. He must think I'm stupid" or "He's smiling. He must be trying to pick me up."

   b. An unjustified generalization is made on the basis of a single incident. For example, "I'll flunk this quiz because I flunked one last week" or "My friend walked right by. No one ever notices me."

   c. Attention is focused on one aspect of a person or event. For example, "I'm stupid because I didn't study sooner" (focusing on just one aspect of themselves--not having studied--and concluding that they are stupid).

   d. The interpretation is distorted, arbitrary, not easily verified, or unjustifiable. For example, "He sees me and thinks I'm great" or "He walked right by--What did I do wrong?" (The subject arbitrarily infers they did something wrong.)

e. Magnification of the significance of one aspect produces an erroneous conclusion about the status of a person or the state of an event. For example, "When I think about how well I'll do on the quiz, I know I'm a fantastic person" or "He didn't even notice me--I'm a social failure."

2. Demand Statements--Any thoughts using words like "must," "should," "ought," "got to," "have to," "need to," thus precluding any other alternatives or possibilities. For example, "I have to do well on this exam," "I really should be more friendly," or "I need to find a girlfriend."

3. Absolutism--thoughts using words like "always," "never," "all," "forever," "none," etc. which don't allow for exceptions or alternatives. For example, "I always do well on tests," "I'll never be popular," "Nothing works out for me."

4. Belief in Luck--thoughts that show a belief in luck, fate, fortune, or chance. For example, "I'm lucky to be so smart," "It's my fate to be alone," or "It's unfortunate that I'm unpopular."

Thoughts which are Irrational would be scored as Irrational-Depressed if they show a negative view of the self, expectation of negative consequences to the self, or self-blame. For example, "She's looking at me, thinking how ugly I am," "With my luck, I'll flunk again," "She didn't notice me because I'm not worth noticing," "I'll do badly because I never study enough." In addition, irrational thoughts which show a negative view of the past, present, or future characterized by pessimism, helplessness, or hopelessness would be scored as Irrational-Depressed. For example, "Things never have worked out for me," "My life is just rotten," "Things won't get any better," "There's nothing I can do about it."

Thoughts which are Irrational would be counted as Irrational-Other if they do not meet the criteria listed above for Irrational-Depressed. This would include irrational thoughts indicating a negative view of other people as well as irrational thoughts indicating a positive view of the self or the past, present, or future. For example, "He didn't say hello. He's a rude person," "I'll do well because I always do well on tests," "She likes me because I'm such a wonderful person," "Things will always work out well for me."

Remember, to count a thought as Irrational, it should not fit the criteria for Rational or Non-scorable thoughts. Thus, Rational thoughts such as wishes ("I hope," "want," "would like"), qualified responses ("I guess," "probably," "maybe," "possibly," "might be," "could be," "had better") and most questions that follow from the stem would not be counted as Irrational. Also, Non-scorable thoughts, such as one-word thoughts, repetition of one-word thoughts, thoughts that don't follow

from the beginning of the thought and thoughts which are purely descriptive or emotional would not be counted as Irrational.

The scoring of thoughts in the structured interview differs in one way from the scoring of the Cognitive Response Test. In scoring the Structured Interview, do not use the special scoring rules listed for compound responses or multiple responses. Instead, count each complete clause (having a subject and verb and which could stand alone as a complete sentence) which is irrational even if it is part of a longer sentence or a string of thoughts. When two complete thoughts are connected by an "and," "but," or "or," treat them as separate thoughts and decide whether or not each thought is irrational. Thus, "I should do well, but I probably will flunk" counts as one irrational thought since the first clause has a demand word ("should") and is therefore irrational, but the second clause has a qualifier ("probably") and is therefore not irrational. "I have never been popular and I never will be" counts as two irrational thoughts because it is two separate irrational sentences connected by an "and." The thought "I have never been popular and never will be" would count as only one irrational-depressed thought because it is only one sentence ("never will be" cannot stand alone as a complete sentence).

If the subject mentions the same irrational thought more than once during the Cognition and Appraisals sections of the interview, it is counted as a separate irrational thought each time it is mentioned. Thus, if a subject mentions one irrational thought five times, it would be counted as five irrational thoughts. Also, if the subject mentions that they thought an irrational thought more than once, it would be counted as that many irrational thoughts. Thus, if a subject mentions that they thought "no one ever likes me" three times, that would be counted as three irrational-depressed thoughts. When you restate a thought mentioned earlier in the interview because the subject neglected to mention it during the Cognition section of the interview, it should be counted as a thought unless they deny having had the thought. Say, for example, that the subject said "She'll never be interested in me" when describing Image Description but forgot to mention it when asked for his thoughts during the Cognition section of the interview. During the Cognition section, you would have said "Earlier you mentioned thinking 'She'll never be interested in me.' Tell me more about that." If the subject then said, "Yes, I thought that too," you would count that as one irrational thought even though they didn't actually repeat the words in that section of the interview. If, however, they said, "No, I didn't think that," it would not be counted as an irrational thought.

APPENDIX E

PARTICIPANT'S EVALUATION FORM

APPENDIX E

PARTICIPANT'S EVALUATION FORM

Your evaluation of this study is important both so that we can determine if the study worked the way we expected it to and so that we can design future studies to eliminate any problems you've become aware of. Please answer the following questions. For most of the questions you will mark a space on the answer sheet, but a few questions will ask you to write out answers on the back of the answer sheet. Be sure to number the answers you write on the back of the answer sheet and to skip the space on the front of the answer sheet for that question.

Be sure to mark your student number on the answer sheet before you begin.

1. How clear and understandable was the explanation of the purpose of the study?

   A. Very clear and understandable
   B. Clear and understandable
   C. A bit hard to understand
   D. Hard to understand
   E. Impossible to understand

2. How clear and understandable were the explanations of the procedures for each session?

   A. Very clear and understandable
   B. Clear and understandable
   C. A bit hard to understand
   D. Hard to understand
   E. Impossible to understand

3. How reasonable did the explanation of the purposes of the study seem?

   A. Quite reasonable and convincing
   B. Reasonable enough
   C. I had a few doubts about it
   D. I found it hard to accept

4. Did you feel like you needed more information about any part of the study? If so, what? (Answer this on the back of the answer sheet and skip space 4 on the front of the answer sheet.)

5. Was the timing of images too fast or too slow?

   A. Much too fast
   B. A bit too fast
   C. About right
   D. A bit slow
   E. Much too slow

6. Did knowing you would be interviewed after the second imaginary scene change the realism of that scene? If so, in what way? (Answer this on the back of the answer sheet and skip space 6 on the front of the answer sheet.)

7. Did knowing you would be interviewed after the second imaginary scene change your feelings and emotions during the second scene? If so, in what way? (Answer this on the back of the answer sheet and skip space 7 on the front of the answer sheet.)

8. Did knowing you would be interviewed after the second imaginary scene change your thoughts during the second scene? If so, in what way? (Answer this on the back of the answer sheet and skip space 8 on the front of the answer sheet.)

Did you ever experience images other than the requested ones when you were asked to image a scene? If so, answer the next five questions. If not, skip to question 14.

9. Were these extra images more pleasant or less pleasant than the requested images?

   A. Always more pleasant
   B. Usually more pleasant
   C. Usually less pleasant
   D. Always less pleasant
   E. I can't remember

10. Were these extra images similar to your dreams?

   A. Usually very similar
   B. Usually somewhat similar
   C. Usually not similar
   D. Usually completely different
   E. I can't remember

11. Were these extra images similar to your daydreams?

   A. Usually very similar
   B. Usually somewhat similar
   C. Usually not similar
   D. Usually completely different
   E. I can't remember

12. Did these images seem connected to your past?

    A. They usually seemed clearly connected to my past.
    B. They sometimes seemed connected to my past.
    C. They usually didn't seem connected to my past.

13. Did these images seem connected to your daily life?

    A. They usually seemed clearly connected to my daily life.
    B. They sometimes seemed connected to my daily life.
    C. They usually didn't seem connected to my daily life.

14. Do you think the questionnaires you filled out during the first session influenced the way you imagined the scenes today or your reactions to the scenes you imagined? If so, how? (Answer this on the back of the answer sheet and skip space 14.)

15. Do you have any suggestions for ways in which the interview following the second imaginary scene could be improved or changed? If so, how? (Answer this on the back of the answer sheet and skip space 15.)

16. What do you think the questionnaires you filled out during the first session were measuring? (Answer this on the back of the answer sheet and skip space 16.)

17. The general purpose of the study was explained, but the exact theories being tested weren't explained to you. Exactly what do you think was being tested? (Answer this on the back of the answer sheet and skip space 17.)

18. Do you think the experimenters found what they were looking for?

    A. Yes, I'm sure of it.
    B. I think so.
    C. I really don't know.
    D. I doubt it.
    E. I'm certain they didn't.

19. If you have any other comments or suggestions, please write them on the back of the answer sheet.

APPENDIX F

INSTRUCTIONS FOR SESSION 1

APPENDIX F

INSTRUCTIONS FOR SESSION 1

Hello. I'm _____ and I'm _____. We're here today to help conduct a study of imagination, thoughts, and feelings being run by Barbara Fleming and Jim Pretzer under the supervision of Dr. Dozier Thornton. As you know, this is a two-part study consisting of this session today plus an individual session. At the end of the session today, each of you will be scheduled for an individual session at a time which is convenient for you. We do ask that you participate in today's session only if you are willing to participate in the second session as well. Please, only sign up for the second session if you plan to attend. Each of the two sessions will take about 1-1/2 hours; therefore, you will receive 3 credits for each of the sessions. You are, of course, free to discontinue participation at any point without penalty.

Today's session will consist of filling out some questionnaires about your thoughts and feelings and about some general background information. In the second session, you will be asked to imagine several everyday situations and to share your reactions with us, as well as being asked to fill out a few more questionnaires. We can't describe exactly what we are looking at right now, because that might influence your responses. However, after the second session we will explain what we're studying in more detail and answer any questions you might have. If you're interested in finding out about the results of the study, a summary of the results will be available when the study is completed. We won't be able to tell you about your individual responses because we won't be looking at people separately. Instead, we will be looking at everyone's responses together.

All the information you give us will be completely confidential. Throughout the study, we would like you to be as open and honest as possible. If there is a question which you prefer not to answer, simply skip it and go on to the next question. The questions you will be asked are designed to gather information. There are no right or wrong answers, so please don't try to figure out what you "should" answer. Just put down the answer which more accurately describes your thoughts or feelings. There's no need to spend a lot of time on any one question--the first response which seems to fit for you is probably the most valid.

Are there any questions?

We will now pass out the questionnaires. Please read and sign the consent form before filling out any other questionnaires. Then be sure to fill in your student number on the answer sheet. There

are a number of different questionnaires using the same answer sheet and one which does not use the answer sheet. When the questionnaire asks you to use the answer sheet, please do not make any marks on the test instruction booklet itself. Please read the instructions for each questionnaire and raise your hand if you have any questions. When you're done with all the questionnaires, please bring them up to the front.

(Note: There is no #86. They need to leave that space on the answer sheet blank. Announce this at the beginning, and then when it seems like they're getting to that question, write it on the board.

Both 490 students will answer questions until students start to complete their forms and bring them up to the front. Then, one student will continue answering questions as they arise, check to see that student numbers are filled in where appropriate [on the answer sheet and on each page of the CRT], and fill out students' credit slips. The other 490 student will schedule individual appointments and give subjects a reminder slip to remind them of the appointment.)

Possible Questions and Suggested Responses

What effect will these credits have on my grade?

Ans.--That depends on the instructor. You will have to ask your instructor for that information.

What will we be asked to imagine? Will it be scary or upsetting?

Ans.--You will be asked to imagine several everyday scenes that might well happen. We are studying ordinary people in day-to-day life, so the scenes will be taken from situations common in daily life.

Give us more details about what you're studying or hope to find.

Ans.--We can't go into more detail because it might influence your responses, but we will be glad to discuss it after the second session.

How can it be confidential if I put my student number down?

Ans.--We have no way of finding out what names go with what student numbers. We use the student number because we need some way to identify what information from both sessions goes together. The student number is a number which is different for each student and which is easy to remember from session to session, so it is the easiest number to use.

What do I do if I don't know my student number?

Ans.--Pick a 6-digit number that you will be sure to remember for the second session (such as the first 6 digits of your phone number). It is important to use the exact same number for both sessions, since we can only use the information if we have information listed under the same number for both sessions.

What happens if I don't participate in the second session?

Ans.--That would mean that we couldn't use any of the information from the first session. You would earn the points from the first session, but would not have a chance to earn the extra points for the second session.

What are the questionnaires about?

Ans.--In general, they will be about your usual thoughts and feelings as well as some general background information. We can't be more specific because that might influence your answers.

APPENDIX G

DEPARTMENTAL RESEARCH CONSENT FORM

APPENDIX G

DEPARTMENTAL RESEARCH CONSENT FORM

Michigan State University
Department of Psychology

1. I have freely consented to take part in a scientific study being conducted by: *Barbara Fleming and James Pretzer*

   under the supervision of: *Dozier W. Thornton, Ph.D.*

   Academic Title: _____

2. The study has been explained to me and I understand the explanation that has been given and what my participation will involve.

3. I understand that I am free to discontinue my participation in the study at any time without penalty.

4. I understand that the results of the study will be treated in strict confidence and that I will remain anonymous. Within these restrictions, results of the study will be made available to me at my request.

5. I understand that my participation in the study does not quarantee any beneficial results to me.

6. I understand that, at my request, I can receive additional explanation of the study after my participation is completed.

Signed _____

Date _____

APPENDIX H

AUDIO-TAPE RELEASE FORM

APPENDIX H

AUDIO-TAPE RELEASE FORM

I agree to permit audiotape recordings of interviews in which I appear to be used for research purposes for up to 20 years from the date noted below. I understand that I may withdraw my permission for use of these materials in general, or for any specific purpose or situation, at any time, by making a written request to Michigan State University or the Department of Psychology. I understand that the confidentiality of the material presented will be preserved.

These materials will be stored and protected as confidential material by the researchers, James Pretzer and Barbara Fleming. The specific methods of maintaining confidentiality and for storage are determined by the researchers. When the materials are no longer useful for research purposes, or at my written request, they will be mechanically erased or destroyed.

Signed _____

Date _____

Witness _____

APPENDIX I

BRIEF EXPLANATION OF STUDY

APPENDIX I

BRIEF EXPLANATION OF STUDY

The Purpose of the Study

You've probably learned (or will soon learn) that there are a number of different theories of emotion. One leading theory says that what a person thinks determines the emotions that they will experience. This is the basic assumption that this study has been testing. The questionnaires which you filled out in the first session were designed to measure your style of thought, your attitudes and beliefs, and your moods and feelings. The questionnaires you filled out today were designed to measure your thoughts and feelings just before the experiment and during the experiment. We asked you to imagine the scenes so that we could ask you about your thoughts and feelings in those situations. By knowing what you thought and how you felt in those situations we can study the relationship between thought and emotion.

Please, don't discuss the purpose of this study with people who haven't completed the study yet, since it might influence their responses during the second session.

If You Have Any Questions or Concerns

If you have any questions about the study, or if you would like to talk about your experiences, Jim Pretzer and Barbara Fleming will be glad to meet with you to answer questions and discuss your experiences.

If at any time you are concerned about your emotional reactions to the study or have any other concerns related to the study, please contact Dr. Dozier Thornton. He will be glad to help you understand and deal with your feelings. If he isn't in his office when you call and you don't want to wait to call him again, please contact Barbara Fleming or Jim Pretzer.