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CRITICAL LIFE EVENTS, IRRATIONAL BELIEFS, AND LOCUS OF CONTROL AS COMPONENTS OF STEADY STATE DEPRESSION

by Wayne L. Pellegrini

Thesis presented to the School of Graduate Studies of the University of Ottawa as partial fulfillment of the requirements for the degree of Doctor of Philosophy

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CURRICULUM STUDIORUM

Wayne L. Pellegrini was born on May 13, 1950, in Waterbury, Connecticut. He received the Bachelor of Arts degree in Philosophy from Saint Michael's College in Winooski, Vermont, in 1972.

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ABSTRACT

This study investigated (1) the relationship between locus of control (ANS-IE), irrational beliefs and critical life events in the prediction of "steady state" depression, and (2) the extent to which locus of control(ANS-IE) and irrational beliefs are developmentally acquired attitudes which are shaped by critical life events. There is relatively little data available on "steady state" depression in relation to locus of control, irrational beliefs and critical life events. Five hundred and thirty-two subjects, comprised of students from the University of Ottawa and long-term residents of the Ottawa YM-YWCA,were administered the Beck Depression Inventory (BDI), the Nowicki-Duke Internal-External Control Scale for Adults (ANS-IE), the Adult Irrational Ideas Inventory (AII), and Coddington's Social Readjustment Questionnaire (CSRQ). Occupation data of the subjects' parents were also obtained. The tests were administered in six different orders and at three-month intervals. Tests for order effects and test-retest measures indicated that the testing results were reliable measures. For the total sample locus of control, irrational beliefs and critical life events and the interaction of critical life events and locus of control were important components of "steady state" depression. Critical life events that occur early in life were, in

particular, an important component in predicting "steady state" depression. For females, the interaction of locus of control and critical life events was a significant component of depression. With regard to critical life events, those that occur early in childhood and late adolescence were important components in predicting "steady state" depression. For males, irrational beliefs, critical life events, and the interaction of critical life events and locus of control made the most significant contribution to the variance of depression.

The results suggest that "steady state" depression in this sample can be measured over a short interval (3 months) without significant attenuation of reported symptoms. The data also provided moderate correlational support for the contemporary cognitive models of Beck and Seligman. These results were moderated by a sex variable.

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INTRODUCTION

The purpose of this study was to investigate critical life events, irrational beliefs and locus of control (ANS-IE) as components of "steady state" depression from a social learning theory perspective. Rotter (1975) has stated that the expected theoretical relationship between locus of control and maladjustment is a U-shaped curve. This is interpreted to mean that "extreme internals" and "extreme externals" should be more maladjusted than the remaining population. Specifically, "extreme internals" and "extreme externals" would be expected to exhibit higher scores on measures of depression, irrational beliefs, and critical life events.

Although the concepts of locus of control and depression (Beck, 1967; Seligman, 1974) are theoretically compatible in many ways, the complexity of the relationship can readily be understood within a social learning theory framework. Within a social learning theory framework the complexity of human behavior is determined by reinforcement values, expectancies, and the psychological situation. Expectancies are broadly defined as generalized personality constructs describing individual differences in beliefs. They incorporate problem-solving expectancies, such as locus of control, into a social learning theory framework. Thus the behavioral effects of locus of control must be understood in relation to other social learning variables.

Social learning theory postulates that an individual who possesses a strong need but a low expectancy of reinforcement may be expected to develop defensive or psychopathological behavior. Specifically, a strong need and low set of expectancies for its gratification is an instance of maladjustment. Thus depression can be thought of as a low expectancy or low freedom of movement in a valued need area. Theoretically, this concept is very similar to Seligman's hypothesis that depressed individuals tend to perceive reinforcement as more response-independent and nondepressed subjects perceive reinforcement as response-dependent. Beck's examples of stresses, e.g., the thwarting of goals, the loss of a job, can all be interpreted in terms of response-independent or response-dependent reinforcement.

Although, theoretically, the expected relationship between internal and external locus of control and depression would be a U-shaped curve, empirical findings have suggested a linear relationship. The findings also suggest that the relationship between locus of control and depression may differ for males and females.

Rotter (1975) expressed his displeasure over the assumptions made in the literature concerning the identification of internals as the "good guys" and externals as the "bad guys." As mentioned previously, Rotter's theory suggests that extreme externality would be associated with maladaptive

attitudes, beliefs, and behavior. It would logically follow that extreme internality and externality would be highly correlated with high depression scores and other indices of maladaptive behavior or beliefs, e.g., high scores on an irrational belief questionnaire.

Contrary to Rotter's theory, Miller and Seligman's "learned helplessness" model and Beck's "cognitive formulation" of depression are theoretically aligned with the empirical findings supporting a linear relationship between locus of control and depression. A person's perceived inability to control environmental events is cited by both theories as contributing significantly to the development and maintenance of depression.

The "learned helplessness" model of Miller and Seligman (1973) and Beck's "cognitive formulation" of depression are cognitive models of depression in which a person's perceived inability to control environmental events or low expectancy of their ability to control environmental events contributes significantly to the development of depression. Particularly within Beck's framework "low expectancies" can be defined as beliefs and irrational cognitions which are considered to be the cause of depression. Unfavorable life stress experiences in a person's social learning history provide the foundation for the development of irrational beliefs (low expectancies) in a more or less

orderly fashion which in time predisposes an individual to over-react to related life circumstances later on.

It is proposed in this study that learned helplessness and irrational beliefs are developmentally acquired attitudes which are shaped by the severity and extent of critical life events that an individual experiences within his lifetime, particularly within early childhood. It is consistent with social learning theory that an individual who has had a learning history characterized by a high number of critical life events and their consequences and a high number of irrational beliefs may develop a relatively steady-like state of depression. This study will examine the relationship between locus of control, irrational beliefs and critical life events in the prediction of "steady state" depression from a social learning theory point of view.

The purpose of the present study is fully delineated in the following review of the literature which first describes locus of control within a social learning theory framework, secondly presents the empirical findings on the relationship between locus of control and depression, thirdly discusses a cognitive model of depression as defined by Beck and its alliance to cognitive restructuring, fourthly outlines the socio-familial factors which are significant in the development of locus of control and depression and, finally, closes with a conclusion, statement of the problem, and research hypotheses.

Chapter II discusses the nature of subjects, the testing settings, the instruments, the administration procedure, and the manner in which the data were analyzed. Chapter III presents the results, and Chapter IV is a discussion of the findings.

CHAPTER I

REVIEW OF THE LITERATURE

Social Learning Theory and Locus of Control

The foundation for the concept of internal-external locus of control had been suggested in early social learning theory research (Lasko, 1952; Worell, 1956). The first faint outlines of the locus of control concept, that is, whether a person perceives rewards and punishments as being contingent upon personal actions, emerged in 1955 from the clinical work of Phares who was then being supervised by Julian B. Rotter. Phares (1976) describes his clinical case work at that time as an opportunity in which a clinical encounter was applied to the concept of social learning theory resulting in the emergence of the internal-external locus of control concept. Phares (1976) describes a patient, Karl S., who was not suffering from the usual anxiety in neurotic complaints but rather from a limited repertoire of social behaviors. The patient possessed almost no interpersonal skills. The goal of psychotherapy for Karl became the achievement of gratification in two general need areas: the social-sexual area and the educational-employment area. Phares attempted to teach the patient how to find a job, keep a job, talk to a girl, interest her, make a date, etc. However, Phares soon discovered that Karl's successes with

various behaviors had not generalized. His successful experiences did not seem to affect his expectations for future success. If Karl was reinforced for a behavior it did not seem to enhance the reinforcement seeking behavior by raising his expectancies in the future. The conclusion was drawn that Karl did not perceive any causal relationship between his behavior and the occurrence of rewards. His successes were attributed to luck or to other factors over which he had no control. The view that behaviors followed by reward tend to be repeated, while behaviors not rewarded tend to disappear was moderated by Karl's expectancy. The learning theory approach failed to provide an adequate explanation. The patient believed the outcomes of his behavior were controlled by external factors rather than by any aspects of himself or his behavior. It was the behavior and thinking of this patient that later stimulated the formulation of the concept of internal and external locus of control as defined by Rotter (1966).

Rotter's (1966) ideal definition of locus of control which guided much of the early work and development of the I-E scale is the following:

> When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful other, or as unpredictable because of the great

> complexity of the forces surrounding him . . . we have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control (p. 1).

Phares (1976) delineated characteristics of "Karl" that have become salient areas of research in locus of control. Karl was described as possessing very little information which was of value in achieving relevant goals and as making no attempts to seek information. As a result of his external belief system, that is, a belief that outcomes are the result of factors other than one's own behavior, he did not intelligently use the cues in his environment to enable him to cope more effectively. Since he did not believe that his behavior would achieve a relevant goal it would not make sense to expect that Karl would acquire information in order to satisfy his needs. He believed that if the reward was going to occur that it would be a matter of chance and that paying attention to environmental cues or seeking information would be a waste of time. Furthermore, Karl's external orientation made him relatively susceptible to influence from the psychotherapist who he perceived as having high status. Karl's external locus of control orientation also did not present a picture of a personality with a strong need for achievement which would require the ability to delay immediate rewards in preference for long-term gains. Although Phares had not the time to systematically

explore the possibility of changing Karl's external beliefs, the case provided an example of which an external orientation was seen mediating a variety of behaviors.

Phares (1976) states that the experience with Karl gave rise to two very important sets of questions: (1) Is locus of control a useful concept by which to characterize Karl? Is it an abstraction that helps generate predictions about a person's behavior in specified future situations? He answered the former questions in the affirmative, stating that the predictive utility remains to be judged by future research. (2) Were Karl's perceptions highly idiosyncratic, or are there significant numbers of people who can be similarly described in terms of the locus of control concept? This type of thinking gave rise to the continuum which had at one extreme persons who feel that they control the occurrence of reinforcements through their own behaviors ("internals") and people at the other end of the continuum who feel that reinforcements occur independently of their actions ("externals"). The latter concept gave rise to the development of a psychometric instrument to measure internal-external differences. The initial research did not search for persons to validate this instrument but rather set up two types of experimental situations in which internal and external locus of control types of behavior could be elicited. The first situation was one in which the experimental situation was structured so

that individuals perceived that they exerted control over the reinforcements that followed their behavior. The second type was one in which the experimental situation conveyed a clear perception to individuals that they did not have such control. It was reasoned that if the hypothesized internal and external locus of control behaviors could not be elicited in highly structured experimental situations that it would be unlikely that they would be found at a personality level. Whether perceived locus of control is viewed as a narrow expectancy arising out of a specific situation, or whether it is viewed as a relatively stable characteristic that people maintain from situation to situation, Rotter (1976) points out that just as individuals' generalized beliefs about control affect behavior so does the structure of the specific situation. Behavior is both the result of the structure of the situation and the beliefs or expectancies brought to the situation with the contribution or variance of each varying from situation to situation in supposedly lawful ways explained by a complex theory of social behavior. The social learning theory framework attempts to provide a structure which can determine the relative contributions of situational expectancies and personality variables.

An attempt was also made to develop an instrument that could assess individual differences with regard to their generalized beliefs about the extent to which they

control and affect their behavior. Phares' (1955) attempt provided a basis for reliable and valid measures of individual differences in such expectancies.

It may now be useful to briefly review some of the relevant assumptions and concepts of social learning theory in order to gain a proper perspective of locus of control in affecting human behavior which is controlled by several variables, including reinforcement value, expectancies, and the psychological situation. The concept of locus of control had emerged from social learning theory as described in the case of Karl S. Social learning theory provides a framework in which the effects that are attributable to locus of control can be shown to depend upon its relationship to other variables in that situation. The theory enables one to determine the way in which I-E interacts with other variables to produce certain reactions. A theoretical framework such as social learning theory is described as useful for the following reasons (Rotter, 1954):

1. New hypotheses, theories, and modes of ordering may be realized.

2. We need a framework to evaluate ideas and research.

3. A theoretical analysis provides a manner in which contradictions and ambiguities arising from different experimental methodologies can be resolved.

Phares (1976) describes the following assumptions as the most important of social learning theory:

1. "The unit of investigation for the study of personality is the interaction of the individual and his meaningful environment" (Rotter, 1954, p. 85). This statement describes behavior as being determined by personal expectancies, beliefs, traits, needs, habits, and environmental determinants. However, it is important to note that meaningful suggests that people respond subjectively to their environment and that a description of objective properties of cues is not sufficient for providing a behavioral explanation.

2. The emphasis of the theory is on learned social behavior. The emphasis is placed on learned attitudes, values, and expectations rather than on instincts, hormones, and blood pressure.

3. There is unity to personality. Although the possibility of change is still possible, as individuals become older their behavior and personality become increasingly consistent.

4. Social learning theory emphasizes both general and specific determinants of behavior. Social learning theory neither argues for the supremacy of disposition nor situational determinants but rather regards behavior as determined by both situation-specific factors and

dispositional elements. Phares also argues against the approach of inferring genotypes from diverse behavioral patterns because of the lack of evidence has all too often given rise to imaginal hypotheses which cannot be proven. On the other hand, social learning theory provides a framework in which consistencies in personality can be inferred from different behaviors which occur across situations. Behaviors, then, are functionally equivalent when they are seen by individuals as leading to the same reward. The process by which social learning theory demonstrates this is by ascertaining that certain functional relationships among goals and behaviors have been established. Otherwise, post hoc explanation or differences only generate untestable hypotheses.

5. There is a purposeful quality to human behavior. This view incorporates the principle of the law of effect describing behavior as goal directed in the sense that people strive to attain or avoid certain aspects of their environment. The positive and negative motivators are determined by observing the direction of behavior.

6. Finally, "the occurrence of a behavior is determined not only by the nature or importance of goals or reinforcements but also by the person's anticipation or expectancy that these goals will occur" (Rotter, 1054, p. 102). According to this assumption, behavior is determined by the

degree to which people expect their behavior will lead to goals as well as by reinforcement through goal achievement.

Rotter (1964) states that social learning theory is one in which the behavior potential for any given behavior to occur in a particular situation is calculated in relation to any single reinforcement. The task of the psychologist then becomes predicting which potential behavior is potentially the strongest and most likely to occur. In order to determine which behavior has the strongest potential for occurrence expectancy, reinforcement value, and the psychological situation, all have to be examined. Although the inclusion of expectancies, reinforcement values, and the psychological situation in making predictions about behavior complicate the psychologist's task, it is preferable to relying on a single variable such as a trait. The complexity also increases the power of prediction.

In order to clarify the relationship of the concepts described above, it is necessary to define exactly what social learning theorists mean by the terms reinforcement and needs, expectancy, and the situation. A reinforcement is defined as anything that has an effect on the occurrence, direction, or kind of behavior. The value of a reinforcement for a person may be defined as "the degree of preference for any reinforcement to occur if the possibilities of their occurring were all equal" (Rotter, 1954, p. 107). Thus,

reinforcement value is determined by the reinforcement's value relative to other anticipated reinforcements. Since needs are seen as developing from learned consequences of biological or built-in reinforcement within social learning theory, both reinforcement values and needs are inferred from the individual's behavior. When the term need is used, the focus is on the person and when the term reinforcement is used, the focus is on environmental factors. Within social learning theory there has been an elaboration or a list of learned needs which include Recognition-Status, Protection-Dependency, Dominance, Independence, Love and Affection, and Physical Comfort.

Expectancy is defined as the "probability held by the individual that a particular reinforcement will occur as a function of a specific behavior on his part in a specific situation or situations" (Rotter, 1954, p. 107). Expectancy is a subjective probability determined by a person's objective past history of reinforcement and by expectancies from other related behavior-reinforcement sequences.

The psychological situation is described within social learning theory as an extremely important determinant of behavior in which the identification of cues that directly affect expectancies and reinforcement values for a given person increases reliable prediction of behavior.

All of the above concepts conceptualized broadly would read as follows:

> The potentiality of occurrence of a set of behaviors that led to the satisfaction of some need (need potential) is a function of the expectancies that these behaviors will lead to these reinforcements (freedom of movement) and the strength or value of these reinforcements (need value) (Rotter, 1954, p. 110).

Phares (1976) describes the concept of generalized expectancies in social learning theory as implying the assumption that people categorize situations along a dimension of similarity of reinforcement. In this way, generalized expectancies are likened to higher level learning skills in which similar situations are perceived by individuals as possessing similar problems to be solved. In this context, a special example of a generalized expectancy would be internal-external control of reinforcement. Locus of control, whether people believe that what happens to them is dependent upon their own behavior and thus is controllable by their actions or is contingent upon luck, powerful others, etc., within the social learning theory framework is quantified and used in conjunction with other variables in predicting human social behavior.

Although the expectancy construct had previously been defined as the subjective probability of the occurrence of an event, the present discussion is utilizing it as a generalized personality construct that describes individual

differences in beliefs. This broader conception of the expectancy construct incorporates problem-solving expectancies, such as locus of control, into a social learning theory framework which makes the prediction of a specific behavior even more accurate.

The preceding discussion was a brief explanation of the relevant assumptions and concepts of social learning theory. It portrayed the complexity of human behavior as determined by reinforcement value, expectancies, and the psychological situation. Locus of control was defined as a variable whose effects are moderated by other social learning theory variables. It could thus clearly be stated that in order to understand the behavioral effects of locus of control it must first be understood how the I-E concept relates to other social learning variables. It is not the intention of the present discussion to present an all-encompassing review of the relationship of the I-E concept to other social learning variables. However, the present discussion is concerned with the testable hypotheses that follow from social learning theory particularly with regard to the relationship between locus of control and defensive or psychopathological behavior. Within the social learning theory context an individual who possesses a strong need but a low expectancy of reinforcement may be expected to develop defensive or psychopathological behavior. A strong need and

low set of expectancies for its gratification can be conceived of as a specific instance of maladjustment. It is therefore possible to think of depression as a low expectancy or low freedom of movement in a valued need area. The previous discussion suggests that caution must be used in simply linking locus of control and depression as social learning theory predicts that many factors contribute to maladjustment beyond a mere discrepancy between need and expectancy (Phares, 1972).

Locus of Control and Depression

Phares (1976) has stated that the relationship between locus of control and depressive reaction appears to be complex. He describes depression as a situation in which an individual perceives not only that the achievement of a values goal has been impeded, but also that this impediment may be permanent. In Phares' view, when the impediment is seen as temporary, the individual reacts with anger or hostility but when the impediment is viewed in the context of finality, the reaction is more likely to be depression. Within the locus of control literature depression is placed in a context which indicates greater expectancy changes by subjects when they view a task as skill controlled than when they see it as chance controlled.

Martin Seligman (1972, 1973, 1975; Miller & Seligman, 1973) has proposed a model of depression, as mentioned above, which attempts to acknowledge the extent to which cognitive factors may interact with specific environmental variables in the development of depression. Seligman has argued that there is a close parallel between learned helplessness and the development of depressive behavior. The essential element in this model of depression is the depressed person's perceived inability to control environmental events, and it has been hypothesized that this perceived loss of control may be a product of either two types of previous experiences. First, a "negative expectancy" of success in coping with stressors may develop from failure in dealing with stress-inducing situations. Thus individuals prone to depression are more likely to give up even though appropriate coping behaviors may be available when faced with these stressful situations. Second, it is possible that a person who has been reinforced on a noncontingent basis may have never learned the complex skills necessary to elicit reinforcement from the environment. It is equally possible that the person prone to depression may not have learned the contingencies under which any skills he does have are likely to be reinforced. This model suggests that a person may come to believe that he is actually unable to control the amount of reinforcement received to the point that the slightest environmental change will trigger a depressive

reaction. Miller and Seligman (1973) have provided evidence to support this hypothesis. Thus, Seligman's model of depression suggests that helplessness is learned by people who have a low expectancy of their ability to control environmental events.

Miller and Seligman (1973) tested the hypothesis that depressed individuals tend to perceive reinforcement as more response-independent than do nondepressed subjects in situations where reinforcement is response-dependent. Thus depression is seen as resulting from learning that reinforcement is independent of voluntary responses. A depressed individual would therefore perceive reinforcement as independent of any personal response. Miller and Seligman state that "depression in this model is a specific cognitive distortion of the perception of the ability of one's own responses to change the environment, rather than a general 'pessimism'" (p. 62). Using this argument, Miller and Seligman administered the I-E scale and the Beck Depression Inventory to groups of undergraduates. Expectancy changes for success were assessed following reinforcement in skill and chance tests for groups. As expected, nondepressed subjects exhibited greater expectancy changes than depressed subjects in skill tests, while the changes of depressed and nondepressed subjects were similar in chance situations. There was no significant relationship between external locus of control and expectancy changes in chance or skill tests.

Based on the fact that reinforcement was perceived as response-independent by depressed individuals and response-dependent by nondepressed individuals it would be expected that there would be a relationship between externality and depression. While several theorists have speculated that the relationship between maladjustment and perceived locus of control may be U-shaped, with relatively greater maladjustment associated with both high internality and high externality, nevertheless there have been few systematic studies to support this hypothesis (James, 1957; Rotter, 1966). Abramowitz (1969) confirmed the hypothesis that external control varies with depression but failed to find a U-shaped relationship between depression and perceived locus of control. He did find a small but significant relationship between externality on I-E scale and depression scores on the Guilford D scale. The rather small correlation led Lamont (1972) to explain such correlations as the result of pessimistic wording to the external items and the optimistic wording of the internal alternatives on the I-E scale. Naditch et al. (1975) have questioned the relevance of Lamont's data. However, Abramowitz entertained the alternative explanation that the relatively restricted segment of the I-E and depression spectra represented by the college students resulted in a linear relationship which may actually be curvilinear when a broader, more heterogeneous population is considered.

In a personality-trait approach to the learned helplessness model of depression, O'Leary, Donovan and Hague (1974) assigned alcoholics to four groups based upon differential scores on Rotter's Locus of Control and Tiffany's Experienced Control Scales. No significant Locus of Control effect was found. However, a significant interaction was obtained indicating that those subjects with an external locus of control who experienced minimal control were significantly more depressed than the other three groups which did not differ from one another. O'Leary et al. concluded that the amount of control experienced over sources of stress appears to be more important in determining the level of depression than one's expectations about control. They further conclude that learned helplessness is a developmentally acquired trait having long-term consequences upon one's affective life. Prociuk, Breen, and Lussier (1976), using two samples of 67 and 44 undergraduates, provide additional correlational support for the relationship between hopelessness, defined as a system of negative expectancies about the future and the positive relationship to external locus of control and depression. Beck's Hopelessness Scale and Depression Inventory were administered.

Although Abramowitz reported general relationships between locus of control and depression, Calhoun, Cheney, and Dawes (1974) presented findings indicating possible sex

differences in the relationship between mood and locus of control and between mood and perceived causes of depression. Specifically, it was found (with a normal sample) that externality was related to the presence of relatively enduring symptoms of clinical depression for both male and female subjects, as well as simple (i.e., transitory) depressed mood for males. Female subjects, however, showed an unreliable relationship between externality and simple depressed mood, and further a positive relationship between degree of depressed mood and the tendency to hold oneself responsible for it,

The relatively few studies on the relationship of locus of control and depression have presented tentative evidence of a linear relationship between externality and depression. The study by Calhoun et al. (1974) suggests sex differences moderate the relationship with females appearing more intrapunitive. In addition to the sex differences, the nature of the populations sampled (university undergraduates) has restricted the interpretation of the findings.

Phares (1972) has presented the hypothesis that depressions are found in people: (1) who possess a strong generalized expectancy that outcomes are their own responsibility, and (2) who do not expect to attain value goals or

outcomes. Such theorizing is similar to Rotter's (1966) hypothesis of a curvilinear relationship between psychopathology and locus of control, i.e., both extremes tend to be maladjusted. Rotter had predicted that both extreme internals and extreme externals will show a greater degree of depression since they have very low generalized expectancies for success in attaining valued goals. Externals become victims of depression because they perceive reinforcement as response-independent and internals suffer the same plight because of the guilt and responsibility they feel over incompetence or lack of ability.

Phares (1976) remarks that, although there is a strong relationship between internality and mastering incompetence, this does not necessarily mean that every internal is competent. Thus, a person with a strong internal locus of control orientation or expectancy would become quite threatened when faced with an actual or anticipated failure. Also, as a defensive reaction, extreme externals may learn to devalue important goals in order to reduce anxiety over their inability to achieve valued goals. Phares further hypothesizes that externals may over time learn to respond in a rather non-anxious way which becomes transformed into indifference. Phares (1971) has offered some evidence for this point. Clearly, the foregoing discussion points to the complexities in the area of the relationship between locus

of control and depression and the difficulty that investigators have had in finding significant correlative relationships between locus of control and depression. Perhaps a discussion of the nature of depression will help to clarify the issue.

Definition of Depression

The syndrome of depression has defied satisfactory explanation of its puzzling and paradoxical features for thousands of years (Beck, 1969). Attitudes and behaviors accompanying depression often contradict basic axioms of human nature such as the "pleasure principle" (maximizing satisfactions and minimizing pain) and the instinct of self-preservation (attempting to prolong life rather than terminate it).

Many ancient writers labeled what we describe as depression as "melancholia." In the fourth century B.C., Hippocrates provided us with the first clinical description of melancholia, while Aretaeus, a physician living in the second century, specifically delineated the manic-depressive cycle. The vivid and detailed accounts of Plutarch (in the second century A.D.) and Pinel (19th century) bear striking resemblance to modern textbook descriptions. The main symptoms used today in describing depression are found in the ancient accounts: disturbed mood, self-castigations,

self-debasing behavior, the wish to die, physical and vegetative symptoms, and delusions of having committed unpardonable sins. While there has been a consistent historical description of depression and its manifestations in all aspects of affective, cognitive, and conative behavior, depression has recently come to be regarded primarily as a "mood or affective" disorder centralizing on the distrubed feelings as the striking feature. This has been exemplified in the use of affective check lists used to define depression. This simplified view of depression ignores the clinical fact that in many patients no mood abnormality at all is elicited and it also ignores the complex nature of the components of depression which themselves may be external manifestations of an unknown pathological process.

Beck (1967) has provided a definition of depression in terms of the following attributes:

1. A specific alternation in mood: sadness, loneliness, apathy.
2. A negative self-concept associated with self-reproaches and self-blame.
3. Aggressive and self-punitive wishes: desires to escape, hide or die.
4. Vegetative changes: anorexia, insomnia, loss of libido.
5. Change in activity level: retardation or agitation.

Beck has stated that there is little agreement among authorities concerning the relationship of depression

to the changes in mood experienced by normal individuals. Kraepelin and his followers consider depression as a well-defined disease quite distinct from normal mood. For this school, the key factor in depression is a profound biological derangement (somatogenic school). However, the psychobiological school founded by Adolph Meyer tends to favor the continuity hypothesis (Beck, 1967). The continuity hypothesis maintains that there is a continuous series of mood reactions ranging from a normal reaction to an extreme reaction in a particularly susceptible person. Some basis for this hypothesis is found in the similarity between the descriptions of the subjective experience of normal low mood and of depression (i.e., blue, sad, unhappy, empty, low, lonely). Second, the behavior of the depressed patient resembles that of a person who is sad or unhappy, particularly in the mournful facial expression and the lowering of the voice. Third, some of the vegetative and physical manifestations characteristic of depression are occasionally seen in individuals who are feeling sad but who would not be considered clinically depressed. This resemblance has led to the concept that the pathological is simply an exaggeration of the normal.

While previous systematic studies (Campbell, 1953; Cassidy, Flanagan & Spellman, 1957) have delineated the characteristic signs and symptoms of depression, Beck provides

his own nosological description and list of symptoms. Beck made the decision as to which symptoms to include (1) by studying several textbooks of psychiatry and monographs on depression to determine what symptoms have been attributed to depression by general consensus and (2) by conducting an intensive study of 50 depressed patients and 30 nondepressed patients in psychotherapy for which the symptoms occurring significantly more often in the depressed group were tallied. On the basis of this tabulation, an inventory consisting of items relevant to depression was constructed and pretested on approximately 100 patients. The symptoms of depression in the inventory are described under four major headings: emotional, cognitive, motivational, and physical and vegetative. The remaining part of this section will elaborate on the academic and research investigations which have resulted in the categorization of depression into four components.

Beck's cognitive formulation of depression has two important components: (1) The cognitive model focuses on covert behaviors, such as self-statements, attitudes, and beliefs, as opposed to overt behaviors; and (2) Maladaptive or irrational cognitions are considered to be the cause of depression. Maladaptive cognitions are thought to cause negative affect, lack of motivation, and other depressive behaviors. According to Beck (1967, 1973), depression is

the result of three interrelated patterns of thought which distort the depressed person's perception of reality. Beck describes the patterns of thought in terms of a "primary triad" (Beck, 1967, p. 255). This primary triad consists of negative views of the self, of present experiences, and of the future. The depressed individual commits four logical errors in the process of distorting environmental input regarding himself, the world, and the future. The first error, arbitrary inference, is defined as drawing a conclusion from a situation or experience that is not supported by the evidence. The second, selective abstraction, is the process whereby the depressed individual focuses only on one detail while ignoring other details of a multifaceted situation. The depressed person commits the logical error of over-generalization when he draws a conclusion about his ability, performance, or worth on the basis of only one incident. Magnification (or alternatively, minimization) is the fourth faulty logic process whereby the person makes gross inaccuracies in judging the significance of events and/or his performance. Beck further hypothesizes that the depression-prone person acquires these negative patterns of thought during childhood and adolescence periods of development from interactions with the environment, others' opinions of him, and by identification with significant figures such as parents. These specific depressive thought patterns consist

of negative attitudes centering around supposed personal deficiencies, around self-blame, whereby the individual holds himself responsible for his deficiencies, and negative expectations reflecting the person's pessimism about things getting any better. The possession of these negative attitudes predisposes a person to depression. This type of person then becomes very vulnerable to depression precipitated by exposure to generally stressful environmental events or to idiosyncratic events. The person's social learning history is an essential determinant of a person's vulnerability to specific stressors. It is also worth noting that the situation in which Beck offers as an example of stressors can also be interpreted in terms of loss of reinforcement.

Mahoney (1976) has stated that it is difficult if not impossible to test Beck's assumptions about the development of depression. Mahoney describes Beck's notes as providing limited evidence that the content of a depressed person's cognitions are characterized by the self-distorting cognitions described above. Further data (Beck, Feshbach & Leg, 1972; Freidman, 1964; Granick, 1963; Loeb, Beck, Diggory & Tuthill, 1967; Nutter, Gruise, Spreng, Weckowicz & Yonge, 1973) have suggested that some distortion process must occur which causes the depressed individual to regard himself as being inadequate but that it is not necessarily impaired cognitive abilities, nor perceptual, psychomotor, or cognitive deficits.

Thus it can be seen that Beck's model focuses on covert behaviors, such as beliefs and maladaptive or irrational cognitions, which are considered to be the cause of depression. An individual who possesses a constellation of irrational beliefs is predisposed and vulnerable to depression because of his social learning history.

Beck believes that cognitive distortions develop in depressed individuals in a more or less orderly fashion. Unfavorable life stress experiences (e.g., early parental loss) over time predispose an individual to overreact to related life circumstances later on. Subsequently, life stress experiences are more likely to be misinterpreted or exaggerated (Beck, 1967).

Paykel et al. (1969) collected information on life stress experiences for 185 depressed and matched control clients with the results that depressed clients reported three times the number of events as the controls. Depressed clients had reported significantly more: (1) increase in arguments with spouse. (2) marital separation, (3) start of a new type of work, (4) death of an immediate family member, (5) serious illness of a family member, (6) departure of a family member from home, (7) serious personal illness, and (8) change in work conditions. A comparison made between those events which represented "exits" (e.g., divorce, child married, etc.) and "entrances" (e.g., marriage, birth of a child, etc.) of a person's social field revealed that

depressed clients had significantly more exits from their social field than controls. Brown et al. (1973) have established a causal link by demonstrating that the experience of an excess of stress events produces an increase in the probability of depression (MacClean, 1974).

The previous studies provide an empirical basis for the hypothesis that a large number of negative life stress events can trigger depression in individuals predisposed by critical events early in life.

This concept as described by Beck is very similar to the previously mentioned concept in which depressed individuals tend to perceive reinforcement as more response-independent and nondepressed subjects perceive reinforcement as response-dependent. Beck's examples of stressors, e.g., the thwarting of goals, the loss of a job, can all be interpreted in terms of response-independent or response-dependent reinforcement.

Beck allies his approach with Ellis' Rational Emotive therapy, a therapeutic strategy designed to restructure illogical thinking patterns. Although Albert Ellis does not emphasize the four logical errors as elaborated by Beck, his cognitive model also focuses on covert behaviors, particularly quantifiable irrational and maladaptive cognitions and beliefs. It is exactly these maladaptive or irrational cognitions which Beck considers to be the cause of depression.

Cognitive Restructuring

Albert Ellis (1962) has recently advanced his "rational-emotive psychotherapy" which takes as its basic premise an axiom stated by Epictetus (60 A.D.): "Men are disturbed not by things but by the views they take of them." Ellis' philosophical and conceptual framework is a comprehensive approach to psychological treatment that places primary emphasis on the cognitive component of human disturbance in addition to considering emotional and behavioral aspects. RET recognizes both the complexity of the etiology of emotional disturbance and the difficulty in helping others to be less self-defeating. It further postulates that psychological problems arise from misperceptions and mistaken cognitions about perceptions; from emotional underreactions or overreactions to normal and unusual stimuli; and from habitually dysfunctional behavior patterns which enable patients to repeat responses even when they know that they are behaving poorly.

The etiology of emotional disturbance is described in terms of philosophical conditioning:

> Rational-emotive therapy is based on the assumption that what we label our "emotional" reactions are caused by our conscious and unconscious evaluations, interpretations, and philosophies. Thus, we feel anxious or depressed because we strongly convince ourselves that it is terrible when we fail at something or that we can't stand the pain of being

> rejected. We feel hostile because we vigorously believe that people who behave unfairly to us absolutely should not be the way they indubitably are, and that it is utterly unsufferable when they frustrate us

RET maintains that there are virtually no legitimate reasons why human beings should terribly upset themselves, become hysterical or emotionally disturbed, no matter what negative stimuli are impinging on them. Although allowing for the feeling of strong emotions, such as sorrow, regret, displeasure, annoyance, rebellion, and determination to change social conditions, it believes that through inappropriate and self-defeating emotions (such as guilt, depression, anxiety, worthlessness, or rage) they are adding an unverifiable hypothesis to an empirically based view that their own acts or others are reprehensible or inefficient and that something should be done about changing them.

The task of the RET therapist is to focus on the few central irrational philosophies of life which the client propounds to himself. The clients are shown how irrational ideas have led to the presenting clinical symptoms and are further encouraged to question and challenge these irrational ideas. The process involves uprooting the irrational beliefs and replacing them with scientifically testable hypotheses about himself and the world which will preclude future emotional disturbance.

Twelve Irrational Ideas that Cause and Sustain Emotional Disturbance

Rational therapy holds that certain core irrational ideas, which have been clinically observed, are at the root of most emotional disturbance. They are:

1. The idea that it is a dire necessity for an adult to be loved by everyone for everything he does--instead of his concentrating on his own self-respect, on winning approval for practical purposes, and on loving rather than being loved.
2. The idea that certain acts are awful or wicked, and that people who perform such acts should be severely punished--instead of the idea that certain acts are inappropriate or antisocial, and that people who perform such acts are behaving stupidly, ignorantly or neurotically and would be better helped to change.
3. The idea that it is horrible when things are not the way one would like them to be--instead of the idea that it is too bad, that one would better try to change or control conditions so that they become more satisfactory, and, if that is not possible, one had better temporarily accept their existence.
4. The idea that human misery is externally caused and is forced on one by outside people and events--instead of the idea that emotional disturbance is caused by the view one takes of conditions.
5. The idea that if something is or may be dangerous or fearsome one should be terribly upset about it--instead of the idea that one would better frankly face it, render it non-dangerous, and, when that is not possible, accept the inevitable.
6. The idea that it is easier to avoid than to face life difficulties and self-responsibilities[4]--instead of the idea that the so-called easy way is invariably the much harder in the long run.

7. The idea that one needs something other or stronger or greater than oneself on which to rely--instead of the idea that it is better to take the risks of thinking and acting independently.

8. The idea that one should be thoroughly competent, intelligent, and achieving in all possible respects--instead of the idea that one would be better rather than always need to do well and accept oneself as a quite imperfect creature, who has general human limitations and specific fallibilities.

9. The idea that because something once strongly affected one's life, it should indefinitely affect it--instead of the idea that one can learn from one's past experiences but not be overly-attached to or prejudiced by them.

10. The idea that one must have certain and perfect control over things--instead of the idea that the world is full of probability and chance and that one can still enjoy life despite this.

11. The idea that human happiness can be achieved by inertia and inaction--instead of the idea that humans tend to be happiest when they are vitally absorbed in creative pursuits, or when they are devoting themselves to people or projects outside themselves.

12. The idea that one has virtually no control over one's emotions and that one cannot help feeling certain things--instead of the idea that one has enormous control over one's destructive emotions if one chooses to work at changing the bigoted and unscientific hypothesis which one employs to create them

The experimental research evaluating the efficacy of cognitive restructuring has been sparse, methodologically poor, and modest in its implications (Mahoney, 1974). Two studies have employed analogies which placed limitations on their clinical relevance (Baker, 1966; Burkhead, 1970). Three studies limited their outcome assessments to subjective

reports of improvement and paper-and-pencil responses (Diloreto, 1971; Goldfried, Decenteceo & Weinberg, 1974; Montgomery, 1971). In other studies which have included both self-report and performance measures of improvement, three have suggested that the effects of cognitive restructuring may be salient in the realm of subjective distress rather than task performance (D'Zurilla, Wison & Nelson, 1973; Karst & Trexler, 1970; Trexler & Karst, 1972). Other studies (Maes & Heimann, 1970) have shown RET effective in the reduction of physiological arousal but less powerful in its impact on subjective distress.

While the findings of the existing experimental work on cognitive restructuring does not warrant an evaluation, successful clinical case studies with RET provide empirical criteria that the clinical efficacy of RET has yet been experimentally demonstrated. The above-mentioned cognitive formulation bears a striking similarity to the basic constructs of a social learning theory explanation which integrates two major schools of thought in psychology, the cognitive approach and the stimulus response or reinforcement approach.

Locus of Control and Life Stresses

The contribution of social and family experience factors in the establishment of generalized I-E beliefs

has been one of the most neglected areas of locus of control research. Phares (1976) has noted that the experimental methodology of the research focusing on the consequences of locus of control beliefs is markedly contrasted with the research on social and family antecedents of locus of control beliefs which is often correlational in nature primarily relying on retrospective data from both subjects and their parents. A proper approach to the problem would require a developmental methodology which unfortunately discourages many investigators, resulting in a situation where the experimental methodology has been used in investigating consequences of locus of control beliefs among college freshmen and sophomores.

Although a knowledge of the origins of certain variables will not enable us to infer causality, it is important to understand the different ways in which people come to their present locus of control beliefs. This knowledge would enable us to better facilitate changes and alterations in those orientations in therapeutic interventions. Phares (1976) has summarized this situation by stating:

> We are attempting to place a personality characteristic, locus of control, in an empirical framework so we can predict differences in locus of control from knowledge of its antecedent conditions and then predict the effects of these differences on associated behaviors (p. 145).

Research done on family antecedents suggests that familial environment characterized by warmth, protection,

nurturance, and consistent parental reinforcement seems to be related to a belief in an internal locus of control (Davis & Phares, 1969; Katkovsky, Crandall & Good, 1967; Shore, 1967). The research further suggests that these effects may be moderated by the sex of the parent and the child (MacDonald, 1971; Soloman, Holihan, Busse & Pareluis, 1971). However, the former conditions may also lead to an external locus of control belief expectancy if there is too much nurturance or too much consistency of reinforcement implying control by "powerful others" (Davis, 1969; Davis & Phares, 1969; Levenson, 1973). Further research on the ordinal position in the family suggests that first born and earlier born children tend to be more internal and that these facts may also be affected by the sex of the child (Chance, 1965; Crandall, Katkovsky & Crandall, 1965; Eiseman & Plat, 1968; MacDonald, 1971; Marks, 1973).

Research in the broader social context has suggested that blacks, minority groups, and other lower socio-economic status groups are associated with externality primarily because of restricted access to significant power or material advantages (Battle & Rotter, 1963; Gruen & Othinger, 1969; Jessor, Graves, Hanson & Jessor, 1968; Lefcourt & Ladwig, 1965, 1966; Lessnig, 1969; Scott & Phelan, 1969; Shaw & Uhl, 1971). Phares (1976) has cautioned interpretation of such findings because of the nature of the I-E instruments utilized in the

research. Lower socio-economic individuals have been comparing themselves to white, middle-class norms and values. Phares suggests the construction of an I-E measure that would reveal a black person's locus of control within his culture rather than within a wider social and political context.

Very few studies have investigated the effects of stressful life events throughout childhood and adolescence on the development of locus of control beliefs. Bryant and Trockel (1976) investigated retrospective reports on stressful life events throughout childhood and adolescence by means of a methodology provided by Coddington (1972) for measuring the amount of social-psychological readjustment required of children and adolescent. Coddington's measure was designed to assess the influence of noncontinuous factors (e.g., stable family life). Bryant and Trockel hypothesized that noncontinuous factors in an individual's life are related to the development of a personal philosophy concerning behavior-consequence contingencies. In other words, noncontinuous life stress factors were influential in the development of an individual's perception of whether reinforcement is more response-independent or whether reinforcement is more response-dependent. Adler (1932), in a similar vein, suggested that persons work to make sense of their past experiences and to develop a tested style of action so as to help themselves predict and cope with both the present and future. Research

on the origins of internal and external control orientations has focused on parent-child relationships and has found that the continuity and stability of an individual's experiences are indeed related to locus of control orientation (Davis & Phares, 1976; Katkovsky, Crandall & Good, 1967; Levison, 1972; MacDonald, 1971). While it is assumed that with increasing age one acquires increased ability to determine the significant life events that one will experience, it was assumed that persons who have experienced stress not under their control will tend toward an external locus of control orientation more than persons who have experienced relatively little such stress. Thus, it was hypothesized that to the extent individuals particularly try to make sense of their stressful or perceived unusual life experiences, it is conceivable that variables such as critical stressful life events are related to locus of control orientation.

Bryant and Trockel's findings suggest (a) only events associated with remembered affective significance were related to locus of control orientation, (b) affectively significant, recalled life stresses (preschool) were related to reporting a strong external control orientation in adulthood, and (c) recalled positive life stresses over which the respondent likely had some control during high school years tended to be related to reporting a strong internal control orientation.

Conclusion

A review of research findings to date suggests that the existing relationship between depression and locus of control is quite complex. The brief discussion of locus of control within a social learning theory framework suggested that caution must be used in linking locus of control and depression since social learning theory predicts that many factors contribute to maladjustment. Reinforcement value, expectancies, and the psychological situation were defined as social learning theory variables that moderate the effects of locus of control in maladaptive behavior.

Recognizing the complexity of predicting specific behaviors within the social learning theory framework, the discussion then focused on the specific relationship between locus of control (expectancies) and depression. Experimental laboratory studies on expectancy changes for success assessed following reinforcement on skill and chance tests has demonstrated that nondepressed subjects exhibited greater expectancy changes than depressed subjects in skill tests, while the changes of depressed and nondepressed subjects were similar in chance situations. Correlational studies have suggested that external control varies with depression but there is evidence to suggest that this relationship may be moderated by a sex variable.

The "learned helplessness" model of Miller and Seligman (1973) and Beck's "cognitive formulation" of depression are cognitive models of depression in which a person's perceived inability to control environmental events or low expectancy of their ability to control environmental events contributes significantly to the development and maintenance of the maladaptive patterns of behavior and thought correlated with depression. It will be remembered that within a social learning theory framework depression can be defined in terms of a person who possesses a strong need but a low expectancy of reinforcement. Particularly within Beck's framework "low expectancies" can be defined as beliefs and irrational cognitions which are considered to be the cause of depression. Unfavorable life stress experiences in a person's social learning history provide the foundation for the development of irrational beliefs (low expectancies) in a more or less orderly fashion which in time predisposes an individual to over-react to related life circumstances later on.

Statement of the Problem

There is very little data available concerning the nature of the Beck Depression Inventory as a measure of trait as opposed to state depression. Furthermore, there appear to be no studies examining the relationship of locus

of control, irrational beliefs and critical life events as components of "steady state" depression.

Although there is evidence to suggest that beliefs, whether irrational or not, are a source of depression, there is little clear evidence regarding exactly what kinds of beliefs are important in predicting depression. Cognitive distortion of one's ability to control his world is considered to be a major component of depression according to the learned helplessness model of depression. However, there is no evidence that a person's belief that he is helpless is important apart from his beliefs about why this is so. For example, it is possible to conceive that a person might believe responses and outcomes are independent of his actions but may have a positive view of himself and the world. According to this view, Beck would not predict depression but Seligman would. Beck would account for depression no in terms of an individual's belief that he lacks control but rather in terms of his belief about why he does. This theoretical difference between Seligman's and Beck's models in predicting depression is accented by studies indicating that the domain of depression-related cognitions regarding control is probably more complex and differentiated than is elaborated by a unidimensional control versus noncontrol approach. The complexity of depression-related cognitions suggests that instead of a unidimensional approach, an assessment of both

one's ability to control his environment and an assessment of his irrational beliefs would be more fruitful as components in predicting depression.

Theories of Seligman (1975) and Beck (1968) suggest that beliefs associated with depression may be acquired by individuals through a course of their developmental learning history. Thus, an individual who has had a learning history characterized by an inability to control a significant number of critical life events and their consequences may develop a trait-like sense of helplessness and cognitive set characterized by irrational beliefs. This hypothesis is theoretically consistent with Rotter's (1966) construct of perceived locus of control and developmentally learned beliefs or attitudes (Social Learning Theory). Beck in particular further suggests that a significant number of critical life events particularly in early childhood will not only predispose a person to depression later in life but will lead to the development of irrational beliefs or a negative cognitive set about himself in the world. This hypothesis is consistent with Social Learning Theory which emphasizes that the unit of investigation for study of personality is the interaction of the individual and his meaningful environment. Thus, from a social learning theory point of view, the interaction of the individual in a significant number of critical life events would be

important in the development of an irrational beliefs system and the belief in one's ability to control his environment. Social learning theory emphasizes social behavior, learned attitudes, values and expectations as opposed to instincts, hormones and blood pressure.

The present study investigated the relationship between locus of control, irrational beliefs and critical life events in the prediction of "steady state" depression. It was assumed that locus of control provided a trait measure analogous with learned helplessness. It was also assumed that the locus of control or learned helplessness along with irrational beliefs was significantly related to the number and kind of critical life events that a person experienced. Furthermore, the extent to which depressive related cognitions are developmentally influenced by critical life events there will be a significant relationship in predicting depression in later years.

Research Hypotheses

The main hypotheses and subhypotheses are:

1. Individuals with an external locus of control orientation, a high number of critical life events and a high number of irrational beliefs will be more depressed than individuals with an internal locus of control orientation, low number of critical life events and a low number of irrational beliefs (control group). It is hypothesized that the relationship that exists between locus of control, critical life events, and irrational beliefs for the depressed group will differ significantly from the relationship that exists within the control group for the total sample, female sample and male sample.

   Subhypothesis 1: Individuals with an external locus of control orientation will be more depressed than those with an internal locus of control orientation.

   Subhypothesis 2: Individuals with a high number of irrational beliefs will be more depressed than individuals with a lower number of irrational beliefs.

   Subhypothesis 3: Individuals with a high number of critical life events will be more depressed than those with a lower number of critical life events.

   Subhypothesis 4: Depressed individuals will have an external locus of control orientation and a high number of irrational beliefs in comparison to a control group which will have more of an external locus of control orientation and a significantly lower number of irrational beliefs.

   Subhypothesis 5: Depressed individuals will have an external locus of control orientation and a higher number of critical life events in comparison to a control group which will have more of an internal locus of control orientation and a significantly lower number of critical life events.

Subhypothesis 6: Depressed individuals will have a higher number of irrational beliefs and a higher number of critical life events in comparison to a control group which will have a significantly lower number of irrational beliefs and critical life events.

2. There will be a developmental relationship between critical life events and locus of control, irrational beliefs and "steady state" depression. In particular, critical life events in early childhood will be an important component in shaping locus of control, irrational beliefs and "steady state" depression.

CHAPTER II

METHOD

Subjects

Five hundred and thirty-two subjects were selected from the University of Ottawa undergraduate psychology population and from long-term residents of the Ottawa YM-YWCA, thus comprising a relatively heterogeneous sample. The sample included males and females with an age range from 15 - 54 years. The socio-economic status of the majority of the university students is middle-class with a range from upper class to lower middle class, while the population for the YM-YWCA has a lower concentration of students and a high percentage of the residents with a lower middle class and lower class background.

A breakdown of the subjects in this experiment by age, sex, and socio-economic status is presented in Tables 1 and 2. Table 3 presents the expected frequencies for each of the seven socio-economic categories for Blishen's norms (1958) and the observations of the present sample (1977). Table 4 presents the Beck Depression Inventory means as a function of depth of depression for the university sample and the YM-YWCA sample.

Table 1

Cumulative Frequencies and Cumulative Percentage Frequencies for the Distribution of the Ages of Subjects*

Age**	Frequency	Cumulative frequency	Cumulative percentage frequency
50-54	3	497	100.0
45-49	0	494	99.4
40-44	0	494	99.4
35-39	4	494	99.4
30-34	19	490	98.6
25-29	44	471	94.8
20-24	212	427	85.9
15-19	215	215	43.3
Total	497		

*Thirty-five subjects could not be classified.

**The scores from Blishen's Occupational Scale for the parents of the subjects in the age range of 35 to 54 years (1.4% of the sample) are not an accurate measure of their socio-economic status.

Table 2

Breakdown of the Subjects According to Sex and Socio-economic Status (Blishen Occupation Scale)

Father's occupational level	Females n	Males n
73.0 - 90.0	23	27
57.0 - 72.9	60	115
52.0 - 56.9	14	28
50.5 - 51.9	31	51
45.1 - 50.4	41	37
41.8 - 45.0	12	9
32.0 - 41.7	4	9
Unclassified	33	38

Table 3

Expected Frequencies for Each of the Seven Socio-Economic Categories for Blishen's Norms (1958) and the Observations of the Present Sample (1977)

	1	2	3	4	5	6	7
Current observations[1]	50	175	42	82	78	21	13
Blishen's expectancies	57.164	181.634	24.894	36.88	102.342	29.965	27.660

[1]Seventy-one subjects could not be included because of insufficient information.

Table 4

Beck Depression Inventory Means as a Function of Depth of Depression for the University Sample and the YM-YWCA Sample

Statistic		Normal (0-9)	Mild (10-15)	Moderate (16-23)	Severe (24-63)
University sample	n	279	39	10	7
	M	3.42	11.7	19.51	28.28
YM-YWCA sample	n	122	41	26	8
	M	3.47	8.39	18.18	34.06

Setting

The questionnaires were administered to the University of Ottawa students in their respective classrooms of instruction, while the YM-YWCA residents completed the questionnaires in the residents' dining lounge. Arrangements for the scheduling of the testing sessions at the University of Ottawa were made through Marie-Claude DeKoninck and at the YM-YWCA arrangements were made through the Housing Director, Miss Betty Bergin.

After permission had been received from Marie-Claude DeKoninck at the University of Ottawa, individual instructors were approached in person in August, 1977. They were asked if the author would be permitted to administer a battery of tests to their students in the fall of 1977. The author then administered the questionnaires in October. Upon arrival at the classroom, each instructor introduced the author as a graduate student completing his doctoral work in psychology and asked the individual students to be as cooperative as possible. The size of the groups at the university ranged in the three classrooms from approximately 70 to 110 students.

In contrast to the approach at the university, only nonuniversity, long-term residents at the "Y" were telephoned from the residence office and asked if they would like to

participate in a research study. The same introductory information that was given in the classroom was given to the "Y" residents. No further information was given, based on the reasoning that any further knowledge of the study would bias the results. If the residents agreed to participate in the study, time schedules for the testing sessions were arranged. The groups at the "Y" ranged from 10 to 20. The residents were allowed to sit at individual tables in the cafeteria after closing hours in order to minimize any possible distractions. This was also done to ensure the confidentiality from their neighbors. The administration at the "Y" took approximately three-and-a-half to four weeks.

Instruments

Phares (1955) made the first crude attempt to measure the individual differences in locus of control beliefs by means of 13 skill items and 13 chance items presented in a Likert scale format. These items were constructed from notions about the nature of skill-chance situations, from common sense, and from reworded items from authoritarianism scales. This work was followed up by James (1957) who improved and revised Phares' scale in predicting that subjects achieving external scores on his scale would tend to behave on an experimental task as if they were in a group receiving chance instructions, while an internal group's

performance would parallel that produced by skill instructions.

The preliminary work described above was followed by the systematic scale development by Rotter, Seeman, and Liverant (1962) who constructed a scale to measure individual differences in locus of control beliefs that met more rigorous standards of test construction. Liverant, Rotter, and Seeman developed an I-E scale that was truly multidimensional in nature. It contained items from several need areas--academic recognition, social recognition, love and affection, dominance, social-political events, and general life philosophy. The I-E scale was developed in order to enhance prediction when perceived locus of control is measured separately in different life areas. For example, an individual may behave in a predominantly internal fashion in academic areas but could be more external in his behavior when social-political events are involved. The efforts of Liverant, Rotter, and Seeman resulted in a scale containing 100 forced-choice items selected from many that were written. Liverant reduced the 100 items to a 60-item version. Later on, Liverant, Rotter, and Crown refined the 60-item scale into a 23-item version that has become known as the Rotter Internal-External Control Scale. The items included in the final scale were based on the following criteria: (1) internal consistency, and (2) validity data from two studies

(Rotter, Liverant & Crown, 1961; Seeman & Evans, 1962). Thus the final 23-item version was predictive of (1) efforts to control one's environment in a hospital, and (2) trials to extinction on the experimental test. Items that manifested a high correlation with the Marlowe-Crown Social Desirability Scale were eliminated. Finally, items not correlating significantly with other items were also excluded. Six filler items were subsequently added in order to partially disguise the purpose of this test. The final version of the I-E scale thus contained 29 items.

Nowicki-Duke Internal-External Control Scale for Adults (ANS-IE)

Nowicki and Duke (1974) developed a scale because of what they perceived as several weaknesses in the I-E scale. Although items of the original I-E scale manifesting a high correlation with social desirability were eliminated, several studies have found evidence of the effects of social desirability on I-E scores. Second, they feel the I-E scale confounds personal, social, political, and ideological causation. Third, they believe that the I-E scale is difficult to read.

Nowicki and Duke, sampling nearly 800 subjects in 12 different studies, found the correlation between the I-E scale and the Nowicki-Duke Scale for Adults to be .68. This correlation suggests that the two scales do not measure the same thing. The ANS-IE scale measures achievement behavior.

It has been shown to be reliable, unrelated to social desirability or intelligence, and is easier to read and understand than the I-E scale.

This scale consists of 40 items based on the Nowicki-Duke Internal-External Control Scale for Children and was constructed for persons with a fifth grade reading level. Items are answered either yes or no.

Split-half reliability data gathered by Nowicki and Duke from 766 subjects in 12 separate studies ranged from .74 to .86, $\underline{N}$ = 158; test-retest reliability over a six-week period was $\underline{r}$ = .83, $\underline{N}$ = 48.

Nowicki and Duke found support for construct validity from (a) significant positive correlation between the scale and the Rotter ranging from .44 to .68, (b) significant relations with the Eysenck Neuroticism scale ranging from .32 to .36, (c) significant relations with the Taylor Manifest Anxiety Scale scores ranging from .34 to .40, (d) significant differences found among hospitalized schizophrenics, hospitalized nonpsychotics, and staff workers, (e) significant but opposite relations for males and females in achievement in three separate studies ranging for females from .39 to .63 and for males from -.50 to -.42. Therefore, the split-half reliability and construct validity data present evidence that the ANS-IE meets adequate standards of test construction.

As Phares (1976) has pointed out, it is too early to know the full utility of the Nowicki-Duke scale because its reliability must be established over a range of studies and populations. Any comparisons with the I-E scale would then be premature.

Beck Depression Inventory (BDI)

The present study utilized the Beck Depression Inventory which was designed to measure four components of depression: (1) cognitive, (2) motivational, (3) emotional, and (4) vegetative. The material related to the 21 items composing the above four components was discussed in the Review of the Literature. Certain psychometric characteristics of the BDI will be discussed below.

Beck (1967) administered the inventory to psychiatric outpatients and inpatients. In addition to the administration of the inventory, each patient was seen by a psychiatrist and rated on a 4-point scale for the depth of depression on items directly related to those composing the BDI. There was agreement among the psychiatrists within 1 degree on the 4-point scale in 97% of the cases. The high percentage of agreement among raters making clinically based judgments in assessing the degree of depression provides evidence for the criterion-related validity of the inventory.

Beck used two methods for evaluating the interal consistency of the inventory: Kruskal-Wallis nonparametric analysis of variance by ranks and split-half reliability. The first analysis revealed that all categories showed a significant relationship to the total score. The second analysis showed that the Pearson r between the odd and even categories yielded a reliability coefficient of .86; with a Spearman-Brown correction, the coefficient rose to .93.

A Mann-Whitney U-test was used by Beck to appraise the power of the Depression Inventory to discriminate between specific Depth of Depression categories and it was found that all differences between adjacent categories (none, mild, moderate, and severe) were found significant. A Pearson biserial R was computed to determine the degree of correlation between the scores on the Depression Inventory and the clinical judgment of Depth of Depression and yielded a significant coefficient in two studies, .65 and .67.

Coddington's Social Readjustment Questionnaire (CSRQ)

Items measuring critical life events that affect the social readjustment of children were divided into four lists according to age, e.g., preschool age group, elementary school age group, junior high school age group, and senior high school age group, and were presented by Coddington et al.

(1972) to 131 teachers, 25 pediatricians, and 87 mental health workers employed in academic divisions of child psychiatry. The mental health workers were asked to rate life events, e.g., the death of a parent, as to the degree of readjustment required by children and adolescents in comparison to a series of critical life events. The life events were categorized into critical life events appropriate for the four age groups mentioned above. The rating of the readjustment required for each life event was made in comparison to an "anchor" event, the birth of a brother or a sister, which was arbitrarily assigned the value of 500 with each life event being a value, higher, lower, or equal to the value of 500. For example, values higher than 500 indicated events that would be more difficult for a child or adolescent to adjust to the birth of a brother or sister.

Coddington et al. found that the rank order correlations among subgroups ranged from .84 to .96, indicating that the 243 raters agreed on the relative importance of all items. A Kruskal-Wallis analysis of variance on the value attached to an item by mental health workers divided by years of experience indicated the value attached to the item differed significantly for only 9 of the 144 life events. The Kruskal-Wallis test revealed 71 statistically significant differences between the ratings of 144 life events by teachers, pediatricians, and mental health professionals. The Mann-Whitney U-test

indicated that almost all these differences were between the ratings of teachers and mental health professionals or pediatricians. Pediatricians and mental health workers disagreed only twice. Thus, the high percentage of agreement among pediatricians and mental health workers provided convincing evidence of the scale's criterion-related validity.

Adult Irrational Ideas Inventory

Fox and Davies (1974) devised an Adult Ideas Inventory (AII). Some of the items for the AII were taken directly from Zingle's Inventory. Zingle (1965) constructed an inventory based on the irrational beliefs and ideas of Ellis (1962). The original instrument consisted of 122 items and was constructed primarily for use with secondary students. It underwent slight revision without changing the basic idea of the statements and new items were added. A total item pool of 130 was constructed for initial experimentation. The response mode selected for items was the conventional 5-point Likert scale ranging from "strongly agree" to "strongly disagree."

The first draft of the AII consisted of 99 items selected from the original item pool, so that each of the 11[1] irrational beliefs outlined by Ellis had 9 corresponding

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1 Although Ellis has currently enumerated 12 irrational beliefs, the AII was constructed in such a manner that the 11 irrational beliefs outlined by Ellis (1962, p. 60-68) were represented.

items. The content validity was established by sending the inventory to Dr. Ellis who questioned 12 items. Only three of the items he questioned remained in the final version after an item analysis. Also, the authors chose the items carefully in concurrence with two judges. Since most of the items were taken directly from the I-I Inventory, the content validity was already established for the scale.

Fox and Davies (1974) then administered the 99 items to a sample of 123 subjects (66 females and 57 males) ranging in age from 13 to 75 and representing a wide occupational range. These items which correlated highest with the total were selected to constitute the final AII inventory.

The final 60-item version of the AII was then administered to 110 university students in a test-retest situation over a three-week interval to obtain reliability estimates. This method yielded a Pearson r of .767, while the Kuder-Richardson formula 20 procedure yielded coefficients of .743 and .779 on the pretest and posttest, respectively.

Fox and Davies established the construct validity by correlating the AII with the I-I and comparing the AII results obtained from three criterion groups. The correlation between the AII and I-I was .70. The criterion groups consisted of 87 newly admitted mental hospital patients, 57 diagnosed alcoholics, and a socio-economic representative

sample drawn from Edmonton, a northern Canadian city of approximately 375,000 people. The means between the representative sample and both the mental hospital patients and the alcoholics were significant, well beyond the .01 level.

Procedure

The questionnaires were randomly distributed among all of the subjects in six different orders. The BDI was administered first in every case since the directions had to be orally administered.[2] The remaining three questionnaires, the AII, ANS-IE, and CSRQ were administered randomly. The various orders in which they were administered were the following:

1. BDI, AII, ANS-IE, CSRQ
2. BDI, AII, CSRQ, ANS-IE
3. BDI, ANS-IE, AII, CSRQ
4. BDI, ANS-IE, CSRQ, AII
5. BDI, CSRQ, AII, ANS-IE
6. BDI, CSRQ, ANS-IE, AII

Preceding the administration of the questionnaires, all of the subjects were given the following instructions:

> You are about to be administered four questionnaires, one which is to be answered by yes or no, one which will require that you color in spaces on a computer

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2 Subjects were asked to answer the items of the BDI in terms of how they generally felt.

> sheet, one that will require that you check the appropriate answer, and one requiring you to circle one of four multiple choice answers. You are asked to think carefully about the answer to each question, proceed at a normal pace and the entire testing sessions should take about one hour. Make sure that the answers on the computer sheet are clear and that erasures have been made cleanly. The questionnaires are being administered to each individual in a different order. The first questionnaire will be the same for everybody and will require that I orally administer the instructions and read the questionnaires to you as you answer the question. Are there any questions before we proceed with the first questionnaire?

The questionnaires were administered to the same subjects (who were available) on two different occasions--mid-October and mid-January.

Statistical Procedures

A Pearson correlation was computed on the BDI, AII, and ANS-IE and a Spearman Rho was computed on the CSRQ in order to obtain a test-retest coefficient of stability.

A one-way ANOVA was computed on the BID, AII, ANS-IE and a Kruskal-Wallis ANOVA was computed on the CSRQ in order to determine if there were any differences in the scores as a result of the order in which the tests were presented.

A multiple regression was computed on the BDI and AII, ANS-IE and CSRQ in order to determine the strength of the linear relationship. In order to verify if the results found from the multiple regression were a legitimate phenomenon rather than the result of chance, a cross-validation analysis was computed on two subgroups which were determined by randomly subdividing the total sample.

The cross-validation analysis of a sample involved the following:

1. Finding the statement of linear regression equation of $\underline{Y}$ from $\underline{X}$ (Guilford, 1965, p. 368) of a sample (validation sample).
2. Substituting the predictor values of the students in the other sample (cross-validation sample) in the statement of linear regression equation.
3. Correlating the predicted criterion values with the actual criterion values of the students in the cross-validation sample.

The formula used was:

$$\underline{Y}' = \underline{r}_{\underline{YX}} \frac{\sigma_{\underline{Y}}}{\sigma_{\underline{X}}} (\underline{X}-\underline{M}_{\underline{X}}) = \underline{M}_{\underline{Y}}$$

where Y' was the predicted criterion value

r_{yx} was the coefficient of correlation of the validation sample

σ_y was the standard deviation of the criterion values in the validation sample

σ_x was the standard deviation of the predictor values in the validation sample

X was the predictor value of each student in the cross-validation sample

M_x was the mean of the predictor values in the validation sample

M_y was the mean of the criterion values in the validation sample.

One-tailed tests of significance were reported using student's t with $N - 2$ degrees of freedom for the computed quantity.

The cross-validation coefficient of correlation of each cross-validation subgroup was compared using a z test of significance. The formula was:

$$z = \frac{z^1 - z^2}{\sigma_2}$$

z^1 was the cross-validated coefficient of correlation of the first subgroup

z^2 was the cross-validated coefficient of correlation of the second subgroup

σ_2 was the standard error of the difference for the coefficient of correlation of the sample.

The significance was then reported for a one-tailed test. This procedure was recommended by Dayhaw (1977).

Three correlation matrices of the four variables considered in the analysis and 12 multiple regressions were computed. Four regression equations were computed for each of the three groups, i.e., the entire sample, for females, and for males. The equations used were:

$$X_1 = B_1X_2 + B_2X_3 + B_3X_2X_3 + C_1$$

$$X_1 = B_4X_2 + B_5X_4 + B_6X_2X_4 + C_2$$

$$X_1 = B_7X_3 + B_8X_4 = B_9X_3X_4 + C_3$$

$$X_1 = B_{10}X_2 + B_{11}X_3 + B_{12}X_4 + B_{13}X_2X_3 + B_{14}X_2X_4 + B_{15}X_3X_4 + C_1$$

where X_1 = BDI

X_2 = CSRQ

X_3 = AII

X_4 = ANS-IE

X_2X_3 = the product of X_2 and X_3

X_2X_4 = the product of X_2 and X_4

X_3X_4 = the product of X_3 and X_4

C = constants

B = regression coefficients.

The F ratios computed for the interaction terms X_2X_3, X_2X_4, and X_3X_4 are equivalent to those computed for interaction effects in a conventional two-way analysis of

variance, and have the additional advantage of not requiring that the interacting variables be independent (Cohen, 1968; Darlington, 1968; Naditch et al., 1975). The F ratios computed for single terms are equivalent to those computed for main effects in conventional analysis of variance. Equation 4 was computed in order to determine whether the three independent variables and interaction effects made independent contributions in accounting for the variance in depressive symptoms in this population.

It is important to note that the BDI scores were divided into four categories:

1. 0-9 (normal)
2. 9-16 (mild depression)
3. 17-23 (moderate depression)
4. 24-51 (severe depression)

The regression analyses were performed separately on the first category (referred to as the control group) of normals and on the remaining three categories in combination (referred to as the depressed group). A Z test of significance was computed on each of the four regression equations between the depressed group and the control group in order to determine if the relationships that exist for the depressed group were significantly different from those existing in the control group. Thus, only the results of the relationships among the variables that exist in a depressed group

that were significantly different from the control group were reported.

The critical life events in each of the four age groups of the CSRQ: 1 - 5; 6 - 12; 13 - 16; 17 - 18 were correlated with the BDI, ANS-IE and AII and a Z test of significance was calculated on the respective correlations between the depressed group and the control group in order to examine whether or not there was evidence to suggest that depression, externality and irrational beliefs are developmentally acquired and contribute significantly in the development of depression.

A discriminant function analysis was computed on BDI for the upper and lower 25% of the depressed group. The discriminant function analysis method was chosen on the basis of being the technique most suitable to test the hypotheses concerning extreme depressed groups. The analyses were conducted using the SPSS. Each analysis was aimed at finding the degree of significance to which each of the three respective independent measures discriminated between the specified groups. The statistical significance for all comparisons was based on the acceptance of the .01 level of probability. From the results obtained, the study focused on the following:

1. The degree of discrimination made between groups in terms of Wilks' Lambda (Cooley & Lohnes, 1962, ch. 6).

2. The contribution of each measure for the final discrimination in terms of discriminant-function coefficients.

3. The mean scores in standard deviation of each group on the three respective independent measures.

4. The accuracy of the discriminant-function scores to classify individuals as members of the specified groups in terms of the percentage of cases correctly classified. The prior probabilities of group size were taken into consideration when the classification was computed.

Three discriminant function analyses were made using two groups at a time. The first comparison was made between the upper and lower quartiles of the depressed group on the BDI.

CHAPTER III

RESULTS

The results are presented in the following order: (1) results of the tests for order effects and reliability; (2) correlational and regression analysis for the total sample in order to test hypothesis 1 and the subhypotheses; discriminant function analysis for the upper and lower quartiles of the depressed group in order to further examine the relationship between the variables in hypothesis 1; (4) *z* tests of significance on the CSRQ (total score and the critical life events in each of the four age groupings) between the depressed and control groups in order to test hypothesis 2 for the total sample; (5) correlational and regression analysis for the female sample; (6) *z* tests of significance on the CSRQ between the control and depressed groups for the female sample; (7) correlational and regression analysis for the male sample; (8) *z* tests of significance on the CSRQ between the control and depressed groups for the male sample; and (9) the cross-validation analyses.

A series of one-way analyses of variance and a Kruskal-Wallis analysis was carried out in order to determine if the order in which the tests were presented had any effect on the scores. There were no significant differences found among the six orders for the BDI, AII, and ANS-IE,

F (5, 494) = 1.58, 1.69, and 1.26, respectively. These results are presented in Tables 5, 6, and 7, respectively. The CSRQ was examined using a Kruskal-Wallis ANOVA which yielded a chi square of 1.959 (df = 5) which was not significant. The analysis indicates that there was no significant effect on the various scores due to the order in which the tests were administered.

A series of Pearson correlations and a Spearman Rho were carried out in order to have a coefficient of stability or a test-retest measure of the BDI, AII, ANS-IE, and CSRQ, respectively. There were significant correlations r(105) = .60, $p < .001$; r(105) = .65, $p < .001$; r(105) = .85, $p < .001$, and Rho (105) = .75, $p < .001$, for the BDI, AII, ANS-IE, and the CSRQ.

The test-retest measures confirm that the dependent measures are reliable over a three-month period.

The relationship between locus of control, irrational beliefs and critical life events in the prediction of depression was analyzed by means of the regression procedure outlined in Chapter II. In order to examine specific main effects, four regression equations were calculated for the total sample, female sample, and male sample, respectively. Furthermore, coefficients for the z test of the significance between the depressed group and control group for the total samples, for the female samples and for the male samples on

Table 5

Summary of One-way Analysis of Variance on BDI for Testing Order Effects

	df	SS	MS	F	F Prob.
Between	5	355.9945	71.1989	1.583	n.s.
Within	494	22225.3372	44.9906		
Total	499	22581.3281			

Table 6

Summary of One-way Analysis of Variance on AII for Testing Order Effects

	df	SS	MS	F	F Prob.
Between	5	302.9800	40.5960	1.620	n.s.
Within	494	11933.9216	24.1577		
Total	499	12136.8984			

Table 7

Summary of One-way Analysis of Variance on ANS-IE for Testing Order Effects

	df	SS	MS	F	F Prob.
Between	5	2520.0336	504.0066	1.288	n.s.
Within	494	193240.3477	391.1746		
Total	499	195760.3750			

each of the four multiple regression equations were calculated. Only the results from the regression equations of the depressed group that were significantly different from the control were reported. Following the regression analyses and z tests of significance for each of the three samples, t tests of significance between the depressed group and control group for all three samples were calculated on critical life events for each of the four age groups of the CSRQ. Only the results of the depressed group that were significantly different from the control group were reported. These results appear in Tables 8 through 26.

A correlation matrix of the variables considered in this study appears in Table 9. Depression was significantly correlated with locus of control ($r = .45$, $p < .001$), irrational beliefs ($r = .22$, $p < .006$), and critical life events ($r = .42$, $p < .001$). Locus of control was also significantly correlated with critical life events ($r = .18$, $p < .02$). Results of the four regression equations on depression for the total sample are shown in Tables 10 and 11 which do not show 0 order correlations because they are included in Tables 8 and 9.

The coefficients for the z test of significance between the depressed group and the control group for the total sample on R was significant for equation 3, equation 2, and equation 4. These results are reported in Table 12.

Table 8

Correlation Matrix and Descriptive Statistics of BDI, ANS-IE, AII and CSRQ for the Control Group

Variable	X_2	X_3	X_4	M	SD
BDI (X_1)	.22**	.37*	.26*	3.64	2.81
ANS-IE (X_2)		.35*	.09	9.24	4.38
AII (X_3)			.09	156.38	17.98
CSRQ (X_4)				882.21	361.94

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

Table 9

Correlation Matrix and Descriptive Statistics of BDI, ANS-IE, AII and CSRQ for the Depressed Group

Variable	X_2	X_3	X_4	M	SD
BDI (X_1)	.45*	.22**	.42*	16.10	6.85
ANS-IE (X_2)		.01	.18***	13.63	5.37
AII (X_3)			.09	174.39	19.98
CSRQ (X_4)				1027.58	431.85

*$p < .001$
**$p < .006$
***$p < .02$

Table 10

Results of Regression Equations on ANS-IE, AII and CSRQ on BDI for the Control Group

Independent variable		1		2		3		4	
		B	F	B	F	B	F	B	F
ANS-IE	(X_2)	.42	1.05	.25	4.30**			.58	1.97
AII	(X_3)	.41	14.20*			.30	6.56**	.32	4.45**
CSRQ	(X_4)			.30	6.35**	.06	.02	.03	.04
X_2X_3		-.36	.61					-.44	.96
X_2X_4				.08	.24			-.15	.68
X_3X_4						.19	.21	.37	.69
R^2		.15	23.02*	.11	15.94*	.19	31.46*	.20	16.64*

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

Table 11

Results of Regression Equations on ANS-IE, AII and CSRQ on BDI for the Depressed Group

Independent variable		1		2		3		4	
		B	F	B	F	B	F	B	F
ANS-IE	(X_2)	-1.27	4.54**	-.41	6.60**			-1.11	4.25**
AII	(X_3)	-.30	2.43			-.33	3.30	-.46	5.33**
CSRQ	(X_4)			-.71	12.03*	-1.47	5.81**	-1.96	11.94*
X_2X_3		1.81	8.48*					.77	1.87
X_2X_4				1.50	29.99*			1.39	26.43*
X_3X_4						2.01	9.61*	1.38	6.04**
R^2		.30	18.03*	.45	35.29*	.27	15.42*	.51	21.09*

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

Table 12

Coefficients for the z Test of the Significance between the Depressed Group and the Control Group for the Total Sample, for the Female Sample, and for the Male Sample on R of Each

Comparison	N	Equation 1	Equation 2	Equation 3	Equation 4
Total sample					
Depressed group	131	.618*	.811*	.576	.887*
Control group	401	.400*	.343*	.472	.485
Female sample					
Depressed group	63	.662	.709*	.412	.758**
Control group	161	.388	.288*	.460	.460**
Male sample					
Depressed group	68	.604	1.256*	.693	1.996*
Control group	240	.436	.377*	.485	.510*

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

In other words, the relationship between the independent variables and depression appears to be significantly different between the depressed group and control group for equation 1, equation 2, and equation 4. In equation 1 there was a significant independent main effect for locus of control (B = 1.27, F = 4.54, $p < .05$) and a significant interaction effect with externality and high irrational beliefs associated with increased depressive symptoms (B = 1.81, F = 8.48, $p < .01$). There was no main effect for irrational beliefs (B = -.30, F = 2.43) suggesting that the small correlation between irrational beliefs and depression was due to the shared variance with locus of control and the interaction effect. Irrational beliefs were related to depression only when it was accompanied by an external locus of control orientation. These results could be interpreted as indicating that individuals with high irrational beliefs would have depressive symptoms when they believe that the outcome of the situation was not within their control.

In equation 2 there was a significant main effect for locus of control (B = -.41, F = 6.60, $p < .05$) and critical life events (B = -.71, F = 12.03, $p < .01$) associated with increased depressive symptoms. There was also a strong significant interaction effect with externality and critical life events associated with increased depressive symptoms (B = 1.50, F = 29.99, $p < .001$), suggesting that externality was

significantly related to depression in this population when subjects with a high number of critical life events experienced an external locus of control orientation, that is, that the outcome was not within their control.

Equation 4 was calculated to examine the relative importance and degree of independence of each of the independent variables and their interactions as they related to depression. When the independent effects of each of the variables were considered, there continued to be a significant main effect for locus of control ($B = -1.11$, $F = 4.25$, $p < .05$), for irrational beliefs ($B = -.46$, $F = 5.33$, $p < .05$), and critical life events ($B = -1.96$, $F = 11.94$, $p < .01$), indicating that externality, high irrational beliefs, and critical life events were important components of depression in this population when these variables were considered directly. The interaction effect of locus of control and high irrational beliefs in equation 1 disappeared in equation 4 probably because of the shared variance between locus of control and critical life events and the independent main effect of high irrational beliefs. The interaction effect between locus of control and critical life events remains significant in equation 4 ($B = 1.39$, $F = 26.43$, $p < .001$), along with the interaction effect of irrational beliefs and critical life events ($B = 1.38$, $F = 6.04$, $p < .05$). The overall R^2 for each of the four regression equations was

calculated, and each was statistically significant at the .001 level.

In summary of hypothesis 1, although the regression equations indicate that locus of control, irrational beliefs and critical life events were important components of depression considered in this study, critical life events considered directly and through their interaction effects with locus of control made the most significant contribution to the variance of depression. The squared multiple correlation coefficients of each of the four regression equations reflect this relative contribution. In equation 1, the R^2 was .30, reflecting the main effect of locus of control and the interaction effect of locus of control and irrational beliefs. However, in equation 2, the R^2 was .45 reflecting the main effects of locus of control, critical life events and the strong interaction effect of locus of control and critical life events which accounted for approximately 4% of the variance (R change = .04).

Hypothesis 1 regarding the differences between the high and low depressed subjects with respect to the experimental variables was further tested by discriminant function analysis performed by the direct method. Thus, all the independent variables were entered into the analysis concurrently. The discriminant functions were created directly from the entire set of independent variables regardless of

the discriminating power of each of the independent variables.

In the analysis, two of the independent measures were found to indicate differences between the high and low depressed subjects at the .01 level. Table 13 presents the group means and standard deviations of the analysis on the high and low depressed subjects. The differences in the BDI are reflected by these differing means and standard deviations. Table 14 presents the Wilks' Lambdas, univariate F ratios and standardized coefficients for the high and low depressed subjects and individual comparison.

The discriminating power of the function for the two group analyses was tested by chi square approximations with p (k-1) degrees of freedom, where p is the number of variables and k is the number of groups. The results of the high and low depressed subjects comparison for the total sample yielded a chi square of 21.989 (df = 3, p .001).

On the basis of the weightings given by the discriminant analysis, high and low depressed subjects were assigned to their predicted group membership (Table 15). Using the discriminant analysis data, the prediction results for the high and low depressed subjects' discrimination indicated that 76.28% of the cases were correctly classified.

Table 13

ANS-IE, AII and CSRQ: Group Means and Standard Deviations for Upper and Lower Quartiles of the Depressed Group

Measures	Low		High		Total	
	M	SD	M	SD	M	SD
ANS-IE.	11.76	5.86	17.23	4.67	14.72	5.89
AII	173.62	18.15	175.23	22.40	174.49	20.44
CSRQ	877.53	336.45	1176.35	529.98	1039.05	472.98

Table 14

ANS-IE, AII and CSRQ: Wilks' Lambdas, Univariate F Ratios, and Standardized Coefficients for Upper and Lower Quartiles of the BDI

Measures	Wilks' Lambdas	F ratio	p	Standardized coefficients Low-High
ANS-IE	.78	19.89*	.01	-.81
AII	.99	.11	n.s.	-.05
CSRQ	.89	8.04	.01	-.44

Table 15

ANS-IE, AII and CSRQ: Prediction Results for the High-Low BDI Discrimination

Actual group	N	Prior Prob.	Predicted Group Membership: Low	n	High	n
Low	34	.46	76.5%	26	23.5%	8
High	40	.54	25.0%	10	75.0%	30

A correlation matrix of critical life events for each of the four age groups and the total score and the BDI appear in Table 16. Although all correlations were significant at least at the .05 level, the coefficients for the z test of significance between the CSRQ scores for the depressed group and the control group were significant only for the first age group. Thus for hypothesis 2, this result could be interpreted as suggesting that, for the total sample, critical life events that occur early in life are an important component in predicting later depression.

In order to examine the specific main effects and interaction effects of the ANS-IE, AII and CSRQ in the prediction of depression (BDI), four regression equations were calculated for the female samples of the depressed group and control group.

A correlation matrix of the variables for females considered in this study appears in Tables 17 and 18. Depression was significantly correlated with locus of control (r = .47, p < .001), irrational beliefs (r = .24, p < .03), and critical life events (r = .28, p < .01).

Results of the four regression equations on depression for females of the depressed group and the control group are shown in Tables 19 and 20, which do not show 0 order correlations because they are included in Tables 16 and 17. Since the coefficients for the z test of the

Table 16

Correlation Matrix and Descriptive Statistics of BDI and $CSRQ_1$, $CSRQ_2$, $CSRQ_3$, $CSRQ_4$, and CSRQ for the Depressed Group and the Control Group

Variable	$CSRQ_1$	$CSRQ_2$	$CSRQ_3$	$CSRQ_4$	CSRQ
BDI (Depressed group)	.40*	.28*	.30*	.25*	.42*
BDI (Control group)	.08***	.10**	.18*	.17*	.26*

*$p < .001$
**$p < .02$
***$p < .05$

Table 17

Correlation Matrix and Descriptive Statistics of BDI, ANS-IE, AII and CSRQ for Females of the Control Group

Variable		X_2	X_3	X_4	M	SD
BDI	(X_1)	.11	.37*	.26*	3.56	2.76
ANS-IE	(X_2)		.26*	.02	8.45	3.86
AII	(X_3)			.10	152.94	18.67
CSRQ	(X_4)				891.24	376.16

*$p < .001$

Table 18

Correlation Matrix and Descriptive Statistics of BDI, ANS-IE, AII and CSRQ for Females of the Depressed Group

Variable		X_2	X_3	X_4	M	SD
BDI	(X_1)	.47*	.24**	.28**	15.59	5.66
ANS-IE	(X_2)		-.06	.12	13.81	5.53
AII	(X_3)			.03	170.35	20.59
CSRQ	(X_4)				938.59	397.40

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

Table 19

Results of Regression Equations of ANS-IE, AII and CSRQ on BDI for Females of the Control Group

Independent variable	1		2		3		4	
	B	F	B	F	B	F	B	F
ANS-IE (X_2)	.28	.17	.16	.71			.26	.15
AII (X_3)	.43	5.29**			.34	3.47	.37	2.28
CSRQ (X_4)			.32	2.51	.21	.14	.19	.11
X_2X_3	-.29	.16					-.24	.11
X_2X_4			-.09	.112			-.05	.04
X_3X_4					.01	.00	.07	.01
R^2	.13	8.07*	.08	4.30**	.18	11.56*	.18	5.71**

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

Table 20

Results of Regression Equations of ANS-IE, AII and CSRQ on BDI for Females of the Depressed Group

Independent variable		1		2		3		4	
		B	F	B	F	B	F	B	F
ANS-IE	(X_2)	-.96	1.87	-.28	1.20			-1.02	1.99
AII	(X_3)	-.16	.50			-.09	.10	-.19	.35
CSRQ	(X_4)			-.67	4.71**	-.88	.82	-.89	.70
X_2X_3		1.50	4.36**					.92	1.51
X_2X_4				1.26	9.40*			.99	4.85**
X_3X_4						1.21	1.42	.39	.16
R^2		.34	11.04*	.37	12.32*	.15	3.76	.42	7.22*

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

significance (Table 12) between the depressed group and control group for the female sample on R was significant only for equation 2 and equation 4, these are the only results which were reported. In other words, the relationship between the independent variables and depression appears to be significantly different between the depressed group and the control group for equation 2 and equation 4.

In equation 2, there was a significant main effect for critical life events ($B = -.67$, $F = 4.71$, $p < .05$). There was also a significant interaction effect between locus of control and critical life events ($B = 1.26$, $F = 9.40$, $p < .01$). Critical life events were related to depression independently as a main effect and when accompanied by an external locus of control. In other words, these results could be interpreted to indicate that critical life events were related to depression in this population whether or not the subjects had an external locus of control orientation.

As in the previous discussion of regression results, equation 4 was calculated to examine the relative importance and the degree of independence of each of the independent variables and their interactions as they are related to depression. However, in this case, since only equation 2 and equation 4 were found to significantly differ in the depressed group from the control group, the significant main effects and interactions in those equations will be

considered. Although there is a significant main effect for critical life events in equation 2, this disappears and is probably due to the shared variance of locus of control and critical life events ($B = .99$, $F = 4.85$, $p < .05$). These results suggest that for the female sample locus of control and critical life events did not make an independent contribution toward accounting for the variance in depression. The interaction effect between locus of control and critical life events remains significant in equation 4.

In summary of hypothesis 1, these regression equations indicate that the interaction of locus of control and critical life events were significant components of depression for females. The squared multiple correlation of each of the two equations reflected relative contributions. In equation 2, which considered the independent main effect of critical life events and a strong interaction effect of locus of control and critical life events, the R^2 was .37. In equation 4, when all of the independent variables were considered simultaneously, the R^2 was .42, and all the variance in depression was accounted for due to the interaction effects of locus of control and critical life events.

A correlation matrix for the relationship between each of the four age groups and the total score for the CSRQ and the BDI for females appear in Table 21. The z test of significance between the CSRQ scores for the

Table 21

Correlation Matrix and Descriptive Statistics of BDI and $CSRQ_1$, $CSRQ_2$, $CSRQ_3$, $CSRQ_4$, and CSRQ for the Female Sample of the Depressed Group and the Control Group

Variable	$CSRQ_1$	$CSRQ_2$	$CSRQ_3$	$CSRQ_4$	CSRQ
BDI (Depressed group)	.49*	.41*	.34**	.33**	.51*
BDI (Control group)	.03	.15***	.15***	.19**	.26*

*$p < .001$
**$p < .007$
***$p < .03$

depressed group and the control group were significant for the first age group and the total score only. Thus, for hypothesis 2 this result could be interpreted as suggesting that for females critical life events that occur early in life are as important as the total number of critical life events in one's life as a component in predicting depression later in life.

In order to examine the specific main effects and interaction effects of the ANS-IE, AII and CSRQ in the prediction of depression (BDI), four regression equations were calculated for the male sample of the depressed group and the control group.

A correlation matrix of the variables for the males of the depressed group considered in this study appears in Tables 22 and 23. Depression was significantly correlated with locus of control ($r = .46$, $p < .001$), irrational beliefs ($r = .19$, $p < .01$), and critical life events ($r = .51$, $p < .001$). Locus of control was also significantly correlated with critical life events ($r = .26$, $p < .05$).

Results of the four regression equations on depression for males of the depressed group and the control group are shown in Tables 24 and 25, which do not show 0 order correlations because they are included in Tables 22 and 23. Since the coefficients for the z test of the significance between the depressed group and the control group for the

Table 22

Correlation Matrix and Descriptive Statistics of BDI, ANS-IE, AII and CSRQ for Males of the Control Group

Variable		X_2	X_3	X_4	M	SD
BDI	(X_1)	.28*	.38*	.26*	3.70	2.84
ANS-IE	(X_2)		.38*	.14**	9.77	4.64
AII	(X_3)			.06	158.73	17.19
CSRQ	(X_4)				877.50	353.03

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

Table 23

Correlation Matrix and Descriptive Statistics of BDI, ANS-IE, AII and CSRQ for Males of the Depressed Group

Variable		X_2	X_3	X_4	M	SD
BDI	(X_1)	.46*	.19**	.51*	16.65	7.96
ANS-IE	(X_2)		.12***	.26**	13.44	5.22
AII	(X_3)			.06	178.75	18.49
CSRQ	(X_4)				1123.63	449.79

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

Table 24

Results of Regression Equations of ANS-IE, AII and CSRQ on BDI for Males of the Control Group

Independent variable		1		2		3		4	
		B	F	B	F	B	F	B	F
ANS-IE	(X_2)	.68	1.57	.31	3.72			.97	3.13
AII	(X_3)	.43	9.66*			.28	2.93	.30	2.18
CSRQ	(X_4)			.28	3.69	-.05	.01	.28	.22
X_2X_3		-.58	.93					-.77	1.67
X_2X_4				-.09	.18			-.22	.87
X_3X_4						.31	.26	.68	1.01
R^2		.17	15.69*	.13	11.80*	.20	19.47*	.22	11.08*

*$p < .01$

Table 25

Results of Regression Equations of ANS-IE, AII and CSRQ on BDI for Males of the Depressed Group

Independent variable		1		2		3		4	
		B	F	B	F	B	F	B	F
ANS-IE	(X_2)	-2.09	3.17	-.56	20.86*			-1.84	3.14
AII	(X_3)	-.56	2.72			-.45	2.92	-.70	5.56**
CSRQ	(X_4)			-.78	6.29**	-1.70	3.71	-2.26	8.08*
X_2X_3		2.72	4.71**					1.42	1.74
X_2X_4				1.73	16.44*			1.64	15.92*
X_3X_4						2.34	6.33*	1.60	3.80
R^2		.29	8.00*	.51	20.86*	.36	10.98*	.58	13.01*

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

male sample on R was significant for equation 1, equation 2, and equation 4, these are the results which were reported. In other words, the relationship between the independent variables and depression was significantly different between the depressed group and the control group for equations 1, 2, and 4.

In equation 1 there was a significant interaction effect with externality and high irrational beliefs associated with increased depressive symptoms ($B = 2.72$, $F = 4.71$, $p < .05$). Irrational beliefs were related to depression only when it was accompanied by an external locus of control orientation. These results could be interpreted as indicating that males with high irrational beliefs would have depressive symptoms when they believe that the outcome of the situation was not within their control.

In equation 2 there was a significant main effect for locus of control ($B = -.56$, $F = 20.86$, $p < .01$) and critical life events ($B = -.78$, $F = 6.29$, $p < .01$) associated with increased depressive symptoms. There was also a strong significant interaction effect with externality and critical life events associated with increased depressive symptoms ($B = 1.73$, $F = 16.44$, $p < .01$), suggesting that externality was significantly related to depression in this population when males with a high number of critical life events experienced an external locus of control orientation, that is, that the outcome was not within their control.

Equation 4 was calculated to examine the relative importance and degree of independence of each of the independent variables and their interactions as they related to depression. When the independent effects of each of the variables were considered, there continued to be a significant main effect for irrational beliefs ($B = -.70$, $F = 5.56$, $p < .05$) and critical life events ($B = -2.26$, $F = 8.08$, $p < .01$) indicating that high irrational beliefs and critical life events were important components of depression in this population of males when these variables were considered directly. The interaction effect of locus of control and high irrational beliefs in equation 1 disappeared in equation 4 probably because of the shared variance between locus of control and critical life events and the independent main effect of high irrational beliefs. The interaction effect between locus of control and critical life events remains significant in equation 4 ($B = 1.64$, $F = 15.92$, $p < .01$). The overall R^2 for each of the four regression equations was calculated, and each was statistically significant at the .01 level.

In summary of hypothesis 1, irrational beliefs and critical life events both as main effects and through their interaction effects were important components of depression for males in this study. The squared multiple correlation coefficients of each of the three regression equations

reflect the particular importance of critical life events and its contribution to the variance of depression. In equation 1, which considered locus of control and irrational beliefs, there was an R^2 of .29 reflecting the interaction between irrational beliefs and locus of control. In equation 2, the R^2 was .51, reflecting the main effect of locus of control and critical life events and the interaction effect of locus of control and critical life events. Finally, in equation 4, the R^2 was .58, reflecting the significant main effects of irrational beliefs and critical life events and particularly the strong interaction effect between locus of control and critical life events.

A correlation matrix of each of the four age groups and total score for the CSRQ and the BDI appear in Table 26. For hypothesis 2, none of the coefficients for the z test of significance between the CSRQ scores for the depressed group and the control group for males was significant.

The attenuation of the cross-validated predictive validity coefficients of subgroup 1 and subgroup 2 (control group) and subgroup 3 and subgroup 4 (depressed group) was zero. These results are presented in Tables 27 and 28. The cross-validation analysis procedure was presented in Chapter II.

Table 26

Correlation Matrix and Descriptive Statistics of BDI and $CSRQ_1$, $CSRQ_2$, $CSRQ_3$, $CSRQ_4$, and CSRQ for the Male Sample of the Depressed Group and the Control Group

Variable	$CSRQ_1$	$CSRQ_2$	$CSRQ_3$	$CSRQ_4$	CSRQ
BDI (Depressed group)	.24**	.08	.23**	.13	.28**
BDI (Control group)	.13**	.06**	.21*	.15**	.26*

*$p < .001$
**$p < .03$

Table 27

Coefficients for the Standard Error of the Difference and for the z Test of Significance between the Coefficients of Correlation of Subgroup 1 and Subgroup 2 (Control Group)

Comparison	n	R	σ_R	z
Subgroup 1	401	.45	.0871	-.2869
Subgroup 2	200	.47		

Table 28

Coefficients for the Standard Error of the Difference and for the z Test of Significance between the Coefficients of Correlation of Subgroup 3 and Subgroup 4 (Depressed Group)

Comparison	n	R	R	z
Subgroup 3	131	.60		
			.1539	.4873
Subgroup 4	66	.55		

CHAPTER IV

DISCUSSION AND CONCLUSIONS

The first part of this chapter will be a brief summary and clarification of the results. This will be followed by a comparison of the present findings to previous work, a brief discussion of the limitations of the study, the theoretical and practical contributions and, finally, suggestions for further research.

Summary and Clarification of Results

The test for order effects and measures of test-retest stability indicated that the testing results were reliable measures. The test-retest measure suggests that the BDI is a reliable measure of "steady state" depression.

It will be remembered that the relationship between the independent variables and depression posited in hypothesis 1 and the developmental relationship between critical life events and learned attitudes posited in hypothesis 2 follow from a social learning theory perspective of depression. The emphasis from a social learning theory point of view is on the interaction of the individual and his meaningful environment (critical life events), learned social behavior and attitudes (locus of control and irrational beliefs) and the manner in which these are

integrated into a unified personality. This study has focused on the relative contribution of the learned social attitudes of locus of control and irrational beliefs and critical life events in the prediction of "steady state" depression. Thus, hypothesis 1 predicted that the interaction of an individual with his environment (critical life events) and developmentally learned attitudes (locus of control and irrational beliefs) would be significant components of "steady state" depression.

For hypothesis 1, the regression equations indicate that locus of control, irrational beliefs and critical life events were important components of depression considered in this study but that critical life events considered directly and through their interaction effects with locus of control made the most significant contribution to the variance of depression. The results of the regression analysis for the total sample were further supported by a discriminant function analysis on the high and low depressed subjects in which using the current sample 76.28% of the subjects were correctly classified as either high or low depressed subjects.

For hypothesis 2 (examining the interaction of the individual and his meaningful environment, which is, in this case, critical life events), the results indicate that for the total sample critical life events that occur early in life are an important component in predicting depression.

In summary of hypothesis 1 for the female sample, the regression analysis indicated that the interaction of locus of control and critical life events was a significant component of depression for females.

For hypothesis 2 for females, the results indicate that critical life events that occur early in life and the sum total of critical life events are important components in predicting depression.

In summary of hypothesis 1 for males, although the regression equations indicate that irrational beliefs and critical life events were important components of depression considered in this study, the interaction of locus of control and critical life events made the most significant contribution to the variance of depression.

For hypothesis 2 for males, the results indicate that neither the total number of critical life events nor the number of critical life events during each of the particular four age groups was significant in predicting depression.

Relationship of Present Research to Previous Work

As was noted in the introduction, the current study used ANS-IE as a measure of locus of control. The ANS-IE is a measure of locus of control in relation to

achievement behavior as opposed to Rotter's I-E scale which is more multidimensional in nature. Thus, any comparisons of the ANS-IE to Rotter's scale are tentative at this point. Any reference to locus of control in the discussion of the results of this study is restricted to its meaning in relation to achievement behavior. Thus, the present data only provide evidence of a trend that learned helplessness and irrational beliefs are developmentally acquired attitudes which are shaped by critical life events that an individual experiences within his lifetime, particularly those of early childhood. These findings are consistent when compared with Bryant and Trockel's (1976) findings of the importance of social and familial factors in the development of the locus of control orientation, particularly critical life events.

The data in this correlational study lend further support that depression and locus of control are linearly related, consistent with the results obtained in previous studies by Abramowitz (1972) and Calhoun et al. (1975).

In summary, the findings of the present study are consistent with social learning theory in predicting that an individual who has a learning history characterized by a high number of critical life events in all likelihood be characterized by an inability to control life events and their consequences and have a high number of irrational beliefs. Furthermore, the data lend support that cognitive factors (locus of

control and irrational beliefs) interact with specific environmental variables (critical life events) in the development of depression. It partially supports the idea of learned helplessness in that a significant number of critical life events may lead an individual to perceive an inability to control environmental events (external locus of control). This perceived loss of control can produce either a negative expectancy of success, or can result in the habitual maintenance of a situation in which a person never learns the complex skills necessary to elicit reinforcement from the environment.

Although the data do not lend support to Beck's description of a "primary triad," they do provide correlational evidence of a cognitive model of depression in which irrational or maladaptive cognitions are considered to be the cause of depression. In addition to providing evidence of a trend that a developmental relationship may exist between irrational beliefs and locus of control and stressful life events in early childhood, it provides support that unfavorable life stress experiences may, over time, predispose an individual to over react to related life experiences later on and consequently result in "steady state" depression.

The data do not support theories of depression that stress the acceptance of responsibility for actions and

thoughts as a primary component of depression. Lamont (1972) and Phares (1972) have suggested that depressive symptoms may be associated with increased internality because the depressive appears to accept responsibility for things that have happened to him. The regression and discriminant function analyses have suggested that depression, irrational beliefs, and critical life events are associated with externality and not internality (ANS-IE) in this sample.

Although the present study found strong evidence where a relationship between depression, locus of control, irrational beliefs, and critical life events existed, the relationship was found to differ for males and females. For females, the interaction of locus of control and critical life events was found to be the most significant component of depression. Critical life events, irrational beliefs and the interaction of critical life events and locus of control were found to be important components of depression for males. The strong evidence of a correlation between critical life events and depression tended to support the helplessness model of depression. It could be hypothesized that the relationship between the rats in Seligman's study who were unable to escape the aversive conditions is analogous to situations children and adolescents are faced with when encountering critical life events which, over time, lead to the development of learned helplessness (locus of control) and, consequently, depression.

Limitations of the Study

The limitations of the study clearly focus on the correlational nature of the research, i.e., correlational data usually provide limited support for a theory. Blaney (1977) believes that exceptions to the former statement may occur only when correlational findings are non-intuitive, predicted by a theory and clearly not predicted by a competing theory, and especially when the variables shown to correlate involve data collected on the same individuals at two or more points in time. He further believes that the strongest support for current cognitive theories of depression comes from experimental studies showing the induction or alleviation of depressive states. This argument is based on the assumption that causal inferences drawn from experimental studies are the only relevant data to provide evidence for current cognitive models of depression. However, as Blaney (1977) reports, the relevance of current experimental studies to even moderately severe clinical depressions is unclear. Although depression reduction experiments can use clinically depressed subjects without being ethically unacceptable, the studies today can only use subjects with mild depressions. But the most important criticism of the experimental induction studies is the possibility that the variables important in the initiation of depressive states

are not the same nor as important as those in maintaining or relieving them. This is the inherent limitation in the experimental reduction designs.

Correlational studies of depression today have primarily involved (1) narrative demonstrations of how the clinical phenomenon of depression can be related to a theory, and (2) the correlation of depressive states with cognitive correlates.

The data in the present correlational study were collected at two points in time on the same individuals. The results were clearly predicted by Beck's and Seligman's theories of depression to the extent that they overlap. The distinction between the two theories, whether depression is the result of an individual's belief that he lacks control (Seligman) or in terms of an individual's belief as to why he believes he lacks control or how unacceptable he/she would find such a belief, was not discriminated among the subjects in this study. The study has provided evidence for support of Beck's cognitive model of depression for females but, for males, the data tended to support Seligman's helplessness model. The interaction terms of the regression equations provided limited support in favor of one model as opposed to an alternative model.

Lamont (1972) has taken the position that the mood content of the external items on the Rotter scale may be

more depressed in content than the internal items which results in depressed subjects choosing items regardless of I-E content. Although Lamont found the judges in his study rated the external Rotter items as more depressive in mood than internal items, he constructed items which were both different in content and meaning than the Rotter I-E items and thus left open to question the extent to which internal depressives select external items on the Rotter scale because of their mood content rather than their locus of control content. Naditch et al. (1975) have stated such a position is difficult to prove. The relevance of these findings to the present study is questionable since the ANS-IE was utilized.

In addition to the correlational nature of the research, the present study involved the use of questionnaires, one in particular which required retrospective reports. Although retrospective reports are extremely sensitive to distortion, the high test-retest coefficient for the CSRQ leads one to believe that it was moderated by the reliability of the reports.

Also, caution must be exercised in interpreting early childhood and adolescent experiences relating directly to adult I-E scores. The retrospective reports do not account for all intervening experiences relating to I-E scores.

Theoretical and Practical Implications

Consistent with the findings of Abramowitz (1969), Calhoun, Cheney, and Dawes (1974), O'Leary et al. (1974), Prociuk (1976), the present study clearly found a linear relationship between locus of control and depression using the ANS-IE as a measure of achievement behavior. Caution must be used in comparing the current study with those using Rotter's scale. Due to the utilization of the Beck Depression Inventory as a measure of "steady state" depression, the findings must cautiously be compared to studies of "state" depression.

The test-retest measure of depression provides evidence to suggest that the theoretical postulated attenuation of depression may not always be the case. In this sample there is reason to believe that a small percentage of the subjects experience depression as a "steady state" and not as a situational crisis-related, transitory state. The evidence is far from conclusive and is merely suggestive due to the short time period over which the measures were taken.

The different relationship between the independent variables and depression for males and females in this sample suggests that "steady state" depression may be conceptualized in a different manner, depending upon sex.

For instance, the evidence in this sample suggests that females may be more likely to experience "steady state" depression when experiencing a critical life event to the extent that they believe that the outcome of their behavior is not considered to be within their control. From a therapeutic point of view, strategies would have to be explored which provided alternative methods of coping with critical life events in a manner consistent with an internal locus of control orientation. For males in this sample, the evidence suggests that, although they would be likely to experience "steady state" depression in a manner similar to females (interaction of critical life events and locus of control), this situation may be compounded by the influence of irrational beliefs. Thus, in addition to exploring various therapeutic strategies in altering their locus of control orientation, a therapy such as Rational Emotive Therapy or methods suggested by Beck would seem appropriate.

The results suggest a developmental relationship between early childhood critical life events and depression for the total sample and the female sample.

Suggestions for Further Research

It is quite clear that in future research, longitudinal studies are a necessity. In such studies variables believed or

hypothesized to be responsible for the onset of depression can be monitored over a period of time and correlated with changes in depression. Such studies further provide a "clinical experiment" in which actual events, persons, or ideas can be correlated with the onset of depression. However, the design does present the problem of the lag between the proposed cause and the depressive onset. Also, unless the sample studied is quite large or severely clinically depressed, the incidence of depression would be small and the results would be based on data obtained from antecedents of moderate mood swings. Despite the former difficulties future longitudinal studies of depression will provide an avenue for a better understanding and consequently improved treatment of depression.

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APPENDIX 1

BIOGRAPHICAL DATA SHEET

APPENDIX 1

BIOGRAPHICAL DATA SHEET

STUDENT NUMBER _____, OR

SOCIAL INSURANCE NUMBER _____

SEX: MALE _____ FEMALE _____

AGE: _____

YOUR OCCUPATION _____

YOUR EDUCATIONAL LEVEL _____

FATHER'S OCCUPATION _____

FATHER'S EDUCATION _____

MOTHER'S OCCUPATION _____

MOTHER'S EDUCATION _____

APPENDIX 2

BECK DEPRESSION INVENTORY

APPENDIX 2

BECK DEPRESSION INVENTORY

A.
- 0 I do not feel sad.
- 1 I feel blue or sad.
- 2a I am blue or sad all the time and I can't snap out of it.
- 2b I am so sad or unhappy that it is quite painful.
- 3 I am so sad or unhappy that I can't stand it.

B.
- 0 I am not particularly pessimistic or discouraged about the future.
- 1a I feel discouraged about the future.
- 2a I feel I have nothing to look forward to.
- 2b I feel that I won't ever get over my troubles.
- 3 I feel that the future is hopeless and that things cannot improve.

C.
- 0 I do not feel like a failure.
- 1 I feel I have failed more than the average person.
- 2a I feel I have accomplished very little that is worthwhile or that means anything.
- 2b As I look back on my life all I can see is a lot of failures.
- 3 I feel I am a complete failure as a person (parent, husband, wife).

D.
- 0 I am not particularly dissatisfied.
- 1a I feel bored most of the time.
- 1b I don't enjoy things the way I used to.
- 2 I don't get satisfaction out of anything any more.
- 3 I am dissatisfied with everything.

E.
- 0 I don't feel particularly guilty.
- 1 I feel bad or unworthy a good part of the time.
- 2a I feel quite guilty.
- 2b I feel bad or unworthy practically all the time now.
- 3 I feel as though I am very bad or worthless.

F. 0 I don't feel I am being punished.
1 I have a feeling that something bad may happen to me.
2 I feel I am being punished or will be punished.
3a I feel I deserve to be punished.
3b I want to be punished.

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

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

I. 0 I don't have any thoughts of harming myself.
1 I have thoughts of harming myself but I would not carry them out.
2a I feel I would be better off dead.
2b I feel my family would be better off if I were dead.
3a I have definite plans about committing suicide.
3b I would kill myself if I could.

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

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

L. 0 I have not lost interest in other people.
1 I am less interested in other people now than I used to be.
2 I have lost most of my interest in other people and have little feeling for them.
3 I have lost all my interest in other people and don't care about them at all.

M.	0	I make decisions about as well as ever.
	1	I try to put off making decisions.
	2	I have great difficulty in making decisions.
	3	I can't make any decisions at all any more.
N.	0	I don't feel I look any worse than I used to.
	1	I am worried that I am looking old or unattractive.
	2	I feel that there are permanent changes in my appearance and they make me look unattractive.
	3	I feel that I am ugly or repulsive looking.
O.	0	I can work about as well as before.
	1a	It takes extra effort to get started at doing something.
	1b	I don't work as well as I used to.
	2	I have to push myself very hard to do anything.
	3	I can't do any work at all.
P.	0	I can sleep as well as usual.
	1	I wake up more tired in the morning than I used to.
	2	I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
	3	I wake up early every day and can't get more than 5 hours sleep.
Q.	0	I don't get any more tired than usual.
	1	I get tired more easily than I used to.
	2	I get tired from doing anything.
	3	I get too tired to do anything.
R.	0	My appetite is no worse than usual.
	1	My appetite is not as good as it used to be.
	2	My appetite is much worse now.
	3	I have no appetite at all any more.
S.	0	I haven't lost much weight, if any, lately.
	1	I have lost more than 5 pounds.
	2	I have lost more than 10 pounds.
	3	I have lost more than 15 pounds.
T.	0	I am no more concerned about my health than usual.
	1	I am concerned about aches and pains or upset stomach or constipation.
	2	I am so concerned with how I feel or what I feel that it's hard to think of much else.
	3	I am completely absorbed in what I feel.

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

APPENDIX 3

NOWICKI-DUKE INTERNAL-EXTERNAL CONTROL SCALE FOR ADULTS

APPENDIX 3

NOWICKI-DUKE INTERNAL-EXTERNAL CONTROL SCALE FOR ADULTS

NAME: _____

Circle one

Yes	No	1.	Do you believe that most problems will solve themselves if you just don't fool with them?
Yes	No	2.	Do you believe that you can stop yourself from catching cold?
Yes	No	3.	Are some people just born lucky?
Yes	No	4.	Most of the time do you feel that getting good grades meant a great deal to you?
Yes	No	5.	Do you believe that if somebody studies hard enough he or she can pass any subject?
Yes	No	6.	Are you often blamed for things that just aren't your fault?
Yes	No	7.	Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?
Yes	No	8.	Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do?
Yes	No	9.	Do you feel that most of the time parents listen to what their children have to say?
Yes	No	10.	Do you believe that wishing can make good things happen?
Yes	No	11.	When you get criticized does it usually seem it's for no good reason at all?

Circle one

Yes No 12. Most of the time do you find it hard to change a friend's (mind) opinion?

Yes No 13. Do you think that cheering more than luck helps a team to win?

Yes No 14. Did you feel that it was nearly impossible to change your parent's mind about anything?

Yes No 15. Do you believe that parents should allow children to make most of their own decisions?

Yes No 16. Do you feel that when you do something wrong there's very little you can do to make it right?

Yes No 17. Do you believe that most people are just born good at sports?

Yes No 18. Are most of the other people your age stronger than you are?

Yes No 19. Do you feel that one of the best ways to handle most problems is just not to think about them?

Yes No 20. Do you feel that you have a lot of choice in deciding whom your friends are?

Yes No 21. If you find a four-leaf clover, do you believe that it might bring you good luck?

Yes No 22. Did you often feel that whether or not you did your homework had much to do with what kind of grades you got?

Yes No 23. Do you feel that when a person your age is angry at you, there's little you can do to stop him or her?

Yes No 24. Have you ever had a good luck charm?

Yes No 25. Do you believe that whether or not people like you depends on how you act?

Yes No 26. Did your parents usually help you if you asked them to?

Circle one

Yes No 27. Have you felt that when people were angry with you it was usually for no reason at all?

Yes No 28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today?

Yes No 29. Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop them?

Yes No 30. Do you think that people can get their own way if they just keep trying?

Yes No 31. Most of the time do you find it useless to try to get your own way at home?

Yes No 32. Do you feel that when good things happen they happen because of hard work?

Yes No 33. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters?

Yes No 34. Do you feel that it's easy to get friends to do what you want them to do?

Yes No 35. Do you usually feel that you have little to say about what you get to eat at home?

Yes No 36. Do you feel that when someone doesn't like you there's little you can do about it.

Yes No 37. Did you usually feel that it was almost useless to try in school because most other students were just plain smarter than you are?

Yes No 38. Are you the kind of person who believes that planning ahead makes things turn out better?

Yes No 39. Most of the time, do you feel that you have little to say about what your family decides to do,

Yes No 40. Do you think it's better to be smart than to be lucky?

APPENDIX 4

CODDINGTON SOCIAL READJUSTMENT QUESTIONNAIRE

APPENDIX 4

CODDINGTON SOCIAL READJUSTMENT QUESTIONNAIRE

The following pages are divided into four age periods:

1. Pre-school (ages 1 - 5);
2. Elementary (ages 6 - 12);
3. Junior high (ages 13 - 16); and
4. Senior high (ages 17 - 18).

Each age grouping has a list of events that could have happened to you at that time in your life. For instance, at the age of five a brother or sister may have died, in which case you would place a check ✓ in the space next to the appropriate event:

Example

death of a brother ✓

	Events	Values
1.	Birth of a brother or sister	____
2.	Decrease in number of arguments between parents	____
3.	Beginning nursery school	____
4.	Serious illness requiring hospitalization of parent	____
5.	Increase in number of arguments between parents	____
6.	Loss of job by a parent	____
7.	Having a visible congenital deformity	____
8.	Change in child's acceptance by peers	____
9.	Decrease in number of arguments with parents	____
10.	Change to a new nursery school	____
11.	Increase in number of arguments with parents	____
12.	Change in father's occupation requiring increased absence from home	____
13.	Outstanding personal achievement	____
14.	Serious Illness requiring hospitalization of child	____
15.	Divorce of parents	____
16.	Marital separation of parents	____
17.	Jail sentence of parent for 1 year or more	____
18.	Marriage of parent to step-parent	____
19.	Addition of third adult to family (i.e., grandparent, etc.)	____
20.	Death of a brother or sister	____
21.	Change in parents' financial status	____
22.	Discovery of being an adopted child	____

	Events	Values
23.	Death of a grandparent	____
24.	Mother beginning to work	____
25.	Death of a close friend	____
26.	Serious illness requiring hospitalization of brother or sister	____
27.	Death of a parent	____
28.	Brother or sister leaving home	____
29.	Acquiring a visible deformity	____
30.	Jail sentence of parent for 30 days or less	____

	Events	Values
1.	Birth of a brother or sister	
2.	Death of a parent	
3.	Mother beginning to work	
4.	Change in child's acceptance by peers	
5.	Serious illness requiring hospitalization of brother or sister	
6.	Jail sentence of parent for 1 year or more	
7.	Marriage of parent to step-parent	
8.	Addition of third adult to family (i.e., grandparent, etc.)	
9.	Divorce of parents	
10.	Serious illness requiring hospitalization of child	
11.	Marital separation of parents	
12.	Increase in number of arguments between parents	
13.	Change in father's occupation requiring increased absence from home	
14.	Suspension from school	
15.	Increase in number of arguments with parents	
16.	Serious illness requiring hospitalization of parent	
17.	Beginning another school year (second grade, third grade, etc.)	
18.	Discovery of being an adopted child	
19.	Decrease in number of arguments between parents	
20.	Pregnancy in unwed teenage sister	

	Events	Values
21.	Move to a new school district	____
22.	Death of a close friend	____
23.	Decrease in number of arguments with parents	____
24.	Becoming involved with drugs or alcohol	____
25.	Beginning school	____
26.	Becoming a full-fledged member of a church	____
27.	Death of a brother or sister	____
28.	Change in parents' financial status	____
29.	Death of a grandparent	____
30.	Brother or sister leaving home	____
31.	Acquiring a visible achievement	____
32.	Outstanding personal achievement	____
33.	Jail sentence of parent for 30 days or less	____
34.	Loss of job by a parent	____
35.	Having a visible congenital deformity	____
36.	Failure of a grade school	____

	Events	Values
1.	Birth of a brother or sister	_____
2.	Pregnancy in unwed teenage sister	_____
3.	Marital separation of parents	_____
4.	Suspension from school	_____
5.	Beginning to date	_____
6.	Serious illness requiring hospitalization of brother or sister	_____
7.	Not making an extracurricular activity he/she wanted to be involved in (i.e., athletic team, band, etc.)	_____
8.	Divorce of parents	_____
9.	Death of a close friend	_____
10.	Beginning junior high school	_____
11.	Increase in number of arguments between parents	_____
12.	Serious illness requiring hospitalization of parent	_____
13.	Becoming involved with drugs or alcohol	_____
14.	Change in child's acceptance by peers	_____
15.	Failure of a grade in school	_____
16.	Unwed pregnancy of child	_____
17.	Discovery of being an adopted child	_____
18.	Jail sentence of a parent for 1 year or more	_____
19.	Death of a parent	_____
20.	Move to a new school district	_____
21.	Decrease in number of arguments between parents	_____
22.	Fathering an unwed pregnancy	_____

	Events	Values
23.	Having a visible congenital deformity	
24.	Death of a brother or sister	
25.	Acquiring a visible deformity	
26.	Breaking up with a boyfriend or girlfriend	
27.	Decrease in number of arguments with parents	
28.	Increase in number of arguments with parents	
29.	Death of a grandparent	
30.	Becoming a full-fledged member of a church	
31.	Addition of third adult to family (i.e., grandparent, etc.)	
32.	Change in parents' financial status	
33.	Jail sentence of a parent for 30 days or less	
34.	Outstanding personal achievement	
35.	Change in father's occupation requiring increased absence from home	
36.	Mother beginning to work	
37.	Brother or sister leaving home	
38.	Marriage of parent to step-parent	
39.	Serious illness requiring hospitalization of child	
40.	Loss of job by a parent	

	Events	Values
1.	Birth of a brother or sister	____
2.	Increase in number of arguments with parents	____
3.	Fathering an unwed pregnancy	____
4.	Death of a parent	____
5.	Not making an extracurricular activity he/she wanted to be involved in (i.e., athletic team, band, etc.)	____
6.	Mother beginning to work	____
7.	Death of a close friend	____
8.	Suspension from school	____
9.	Being accepted at a college of his/her choice	____
10.	Unwed pregnancy of child	____
11.	Pregnancy in unwed teenage sister	____
12.	Death of a grandparent	____
13.	Addition of third adult to family (i.e., grandparent, etc.)	____
14.	Decrease in number of arguments with parents	____
15.	Beginning to date	____
16.	Serious illness requiring hospitalization of brother or sister	____
17.	Serious illness requiring hospitalization of child	____
18.	Change in parents' financial status	____
19.	Jail sentence of a parent for 30 days or less	____
20.	Decrease in number of arguments between parents	____
21.	Increase in number of arguments between parents	____
22.	Discovery of being an adopted child	____

	Events	Values
23.	Marriage of parent to step-parent	____
24.	Breaking up with a boyfriend or girlfriend	____
25.	Having a visible congenital deformity	____
26.	Change in father's occupation requiring increased absence from home	____
27.	Becoming a full-fledged member of a church	____
28.	Failure of a grade in school	____
29.	Acquiring a visible deformity	____
30.	Getting married	____
31.	Change in child's acceptance by peers	____
32.	Death of a brother or sister	____
33.	Brother or sister leaving home	____
34.	Serious illness requiring hospitalization of parent	____
35.	Becoming involved with drugs or alcohol	____
36.	Divorce of parents	____
37.	Move to a new school district	____
38.	Outstanding personal achievement	____
39.	Loss of job by a parent	____
40.	Marital separation of parents	____
41.	Beginning senior high school	____
42.	Jail sentence of a parent for 1 year or more	____

APPENDIX 5

ADULT IRRATIONAL IDEAS INVENTORY

APPENDIX 5

ADULT IRRATIONAL IDEAS INVENTORY

Read each of the following statements and decide how much you agree or disagree. Show your answer on the separate answer page. Use the code shown below and carefully color in the appropriate space on the answer sheet.

A. I strongly agree	1	2	3	4
B. I agree	1	2	3	4
C. Undecided	1	2	3	4
D. I disagree	1	2	3	4
E. I strongly disagree	1	2	3	4

NOTE

Answer all the questions. (Mark only one choice for each question.)

There are no right or wrong answers.

There is no time limit.

If you wish to change an answer, be certain to erase the undesired answer completely.

1. Jeers humiliate me even when I know I am right.
2. I worry about situations where I am being tested.
3. The best way to teach a child right from wrong is to spank him when he is wrong.
4. I must learn to "keep my head" when things go wrong.
5. I think I am getting a fair deal in life.
6. I worry about eternity.
7. I am happiest when I am sitting around doing little or nothing.
8. I prefer to be independent of others in making decisions.
9. If a person is ill-tempered and moody, he will probably never change.
10. I get very upset when I hear of people (not close relatives or close friends) who are very ill.
11. Crime never pays.
12. My family and close friends do not take enough time to become acquainted with my problems.
13. People who do not achieve competency in at least one area are worthless.
14. We are justified in refusing to forgive our enemies.
15. I frequently feel unhappy with my appearance.
16. I feel that life has a great deal more happiness than trouble.
17. I worry over possible misfortunes.
18. I often spend more time in trying to think of ways of getting out of something than it would take me to do it.
19. I tend to look to others for the kind of behavior they approve as right and wrong.
20. Some people are dull and unimaginative because of defective training as a child.

21. Helping others is the very basis of life.

22. School promotions should be for intellectual merit alone.

23. It is very important to me when I do a good job to be praised.

24. I find it difficult to take criticism without feeling hurt.

25. It is terribly upsetting the way some students seem to be constantly protesting about one thing or another.

26. It is impossible at any given time to change one's emotions.

27. I tend to worry about possible accidents and disasters.

28. I need to learn how to keep from being too assertive or too bold.

29. To cooperate with others is better than doing what you feel should be done.

30. Sympathy is the most beautiful emotion of man.

31. People who criticize the government are either ignorant or foolish.

32. I wish that more affection were shown by members of my family.

33. When a person is no longer interested in doing his best, he is done for.

34. I get very angry when I miss a buss which passes only a few feet away from me.

35. My place of employment and/or my neighborhood provide adequate opportunity for me to meet and make friends.

36. I can walk past a grave yard alone at night without feeling uneasy.

37. I avoid inviting others to my home because it is not as nice as theirs.

38. I prefer to have someone with me when I receive bad news.

39. It is necessary to be especially friendly to new co-workers and neighbors.

40. The good person is usually right.

41. Sometimes I feel that no one loves me.

42. I worry about little things.

43. Riches are a sure basis for happiness in the home.

44. I can face a difficult task without fear.

45. I usually try to avoid doing chores which I dislike doing.

46. I like to bear responsibilities alone.

47. Other people's problems frequently cause me great concern.

48. It is sinful to doubt the Bible.

49. It makes me very uncomfortable to be different.

50. I get terribly upset and miserable when things are not the way I would like them to be.

51. I find that my occupation and social life tends to make me unhappy:

52. I am afraid in the dark.

53. Many people that I know are so unkind or unfriendly that I avoid them.

54. It is better to take risks and to commit possible errors, than to seek unnecessary aid of others.

55. I get disturbed when neighbors are very harsh with their little children.

56. I find it very upsetting when important people are indifferent to me.

57. I have sometimes had a nickname which upset me.

58. I have sometimes crossed the street to avoid meeting some person.

59. When a friend ignores me I become extremely upset.

60. My feelings are easily hurt.

FEUILLE DE CODIFICATION
CODING SHEET

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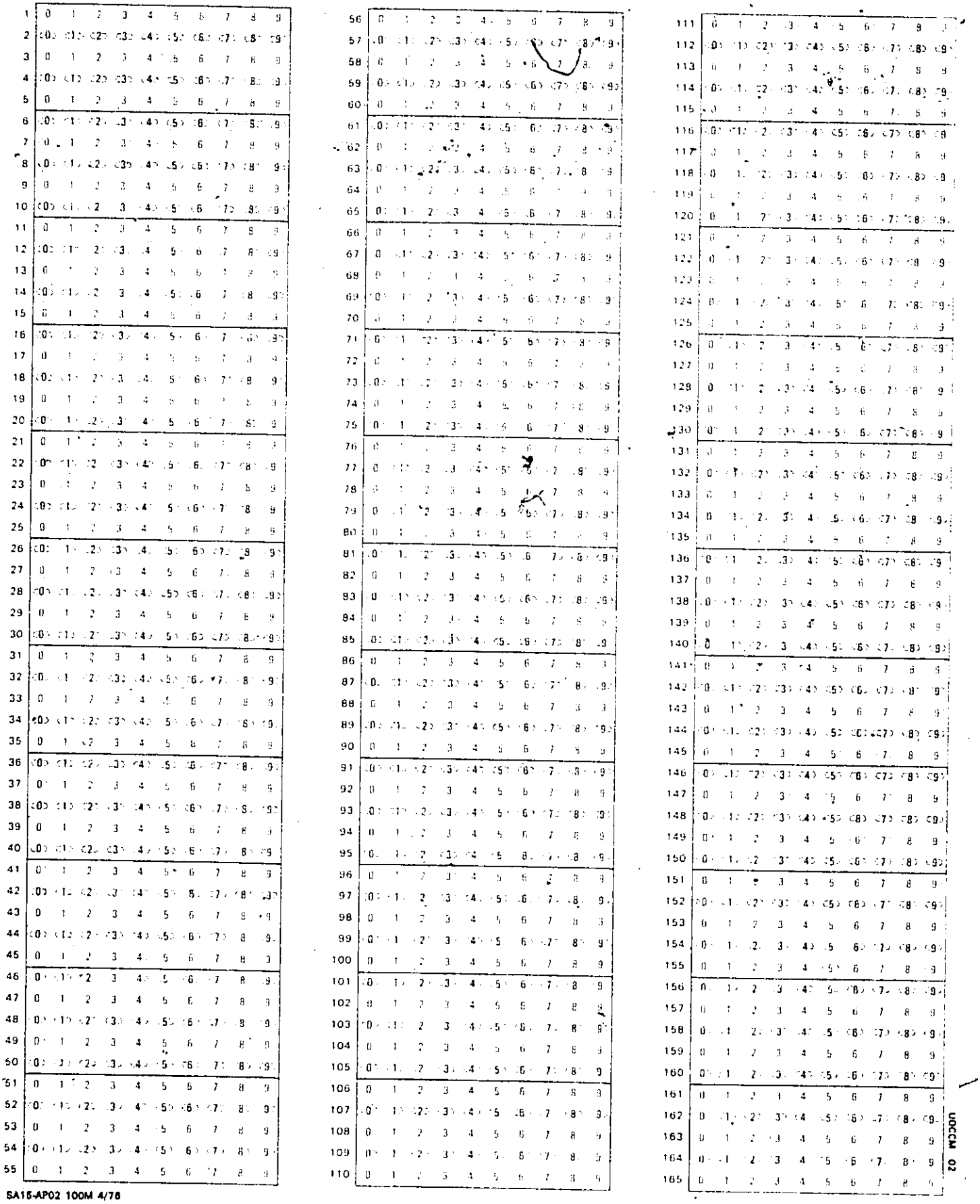
COMPUTING CENTRE

NE RIEN INSCRIRE À GAUCHE DE CETTE LIGNE. UTILISER UN CRAYON À MINE 'HB'.

MAKE NO MARKS TO THE LEFT OF THIS LINE. USE AN 'HB' LEAD PENCIL.

152

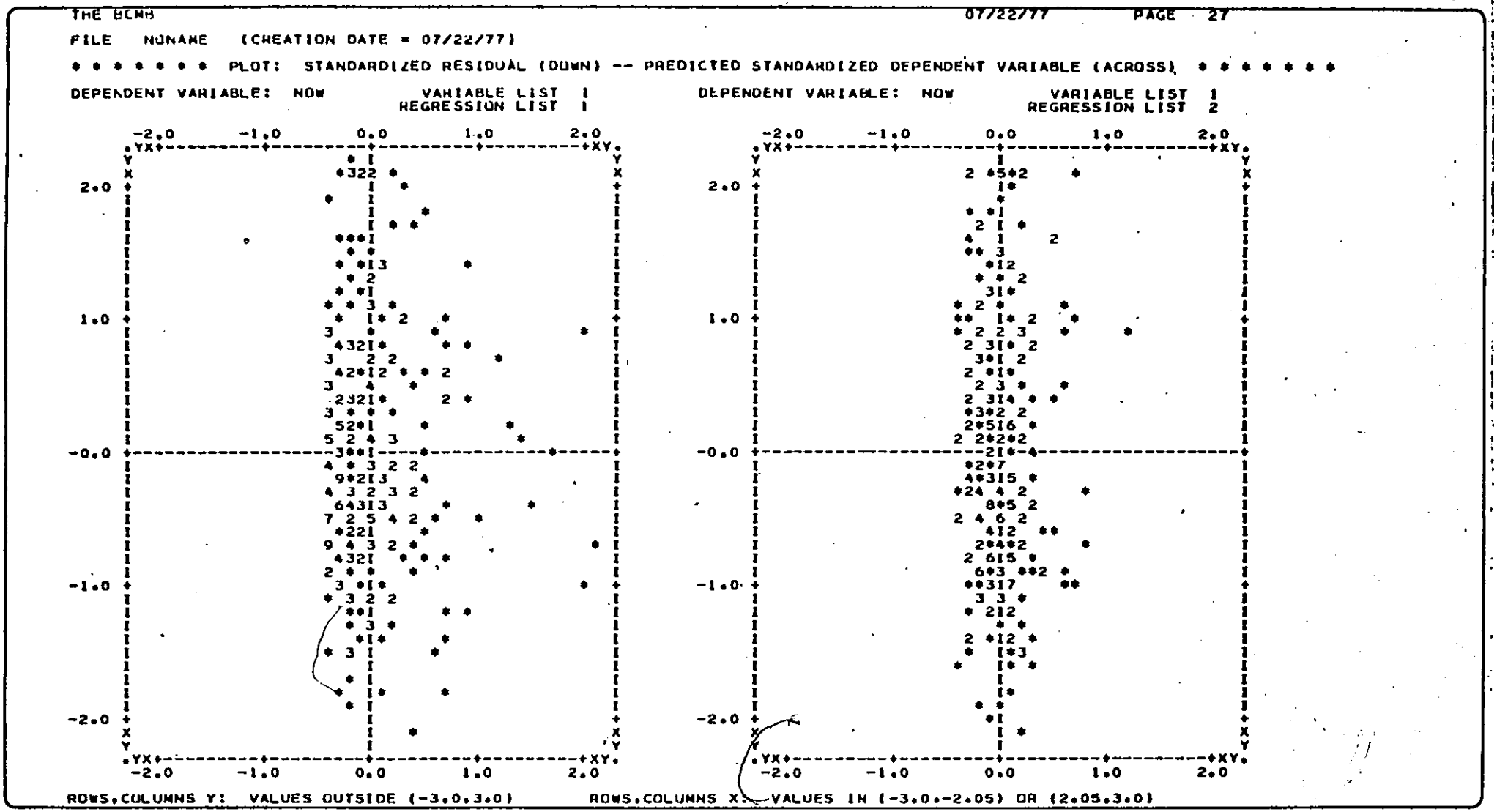


UOCCM 02

SA15-AP02 100M 4/76

APPENDIX 6

PLOTTED RESIDUALS FOR THE RELATIONSHIP BETWEEN LOCUS OF CONTROL AND DEPRESSION, BETWEEN LOCUS OF CONTROL AND CRITICAL LIFE EVENTS, AND BETWEEN LOCUS OF CONTROL AND IRRATIONAL BELIEFS



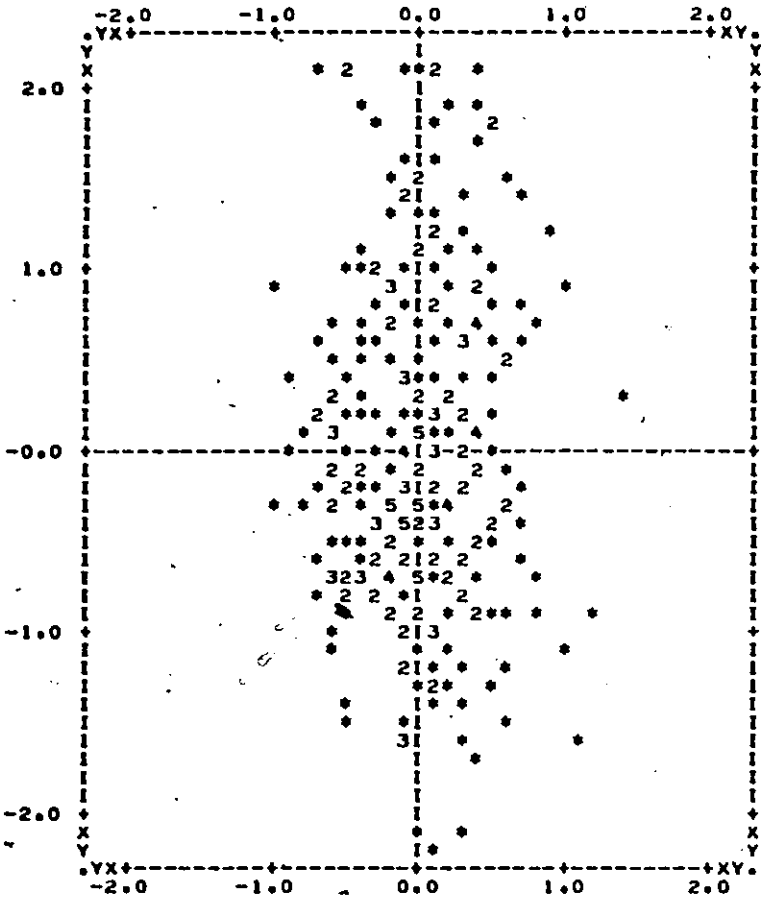
Locus of Control and Depression

Locus of Control and Critical Life Events

FILE NONAME (CREATION DATE = 07/22/77)

* * * * * * * PLOT: STANDARDIZED RESIDUAL (DOWN) -- PREDICTED STANDARDIZED DEPENDENT VARIABLE (ACROSS) * * * * * * *

DEPENDENT VARIABLE: NOW VARIABLE LIST 1
REGRESSION LIST 3

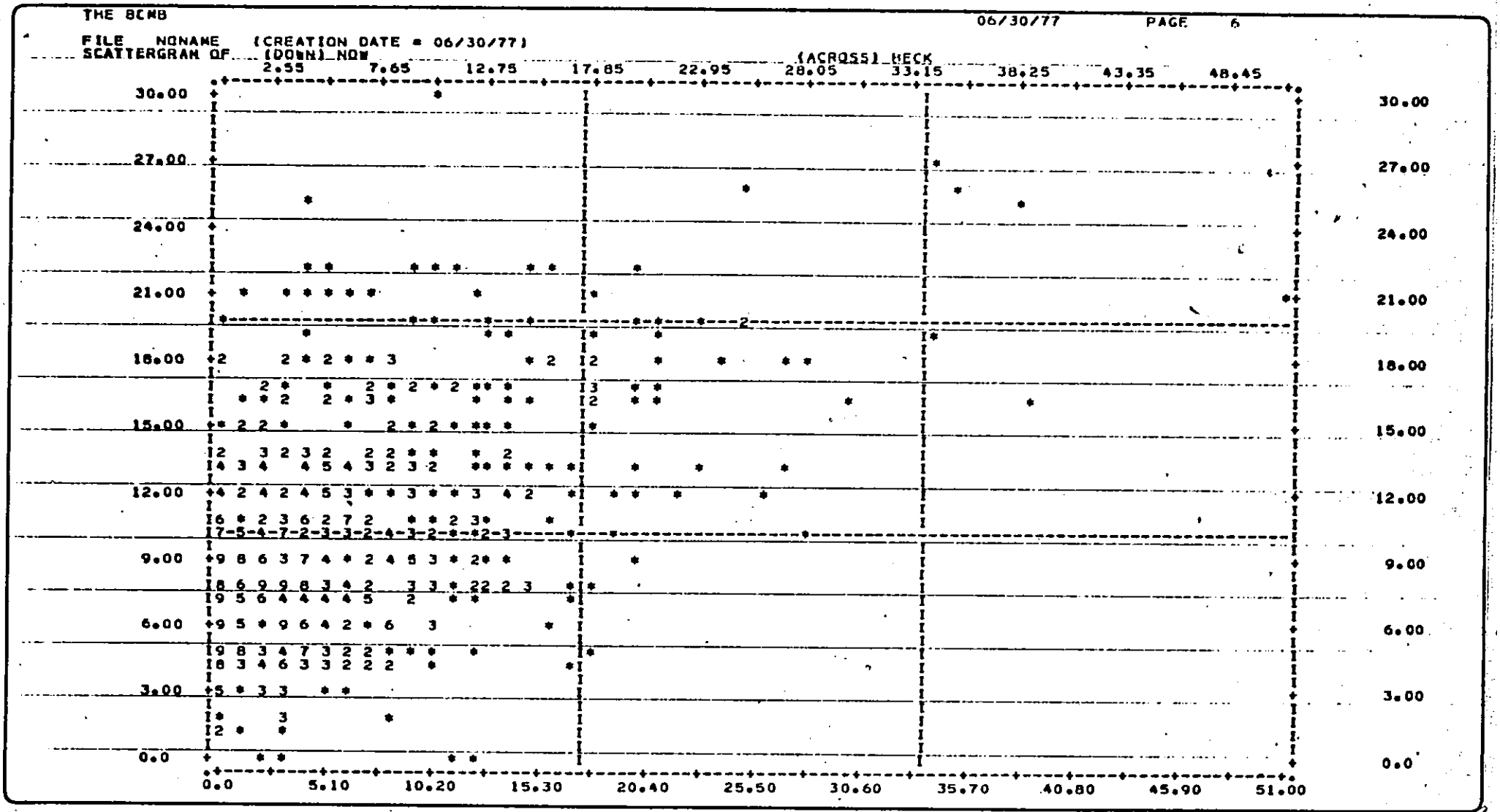


ROWS,COLUMNS Y: VALUES OUTSIDE (-3.0,3.0) ROWS,COLUMNS X: VALUES IN (-3.0,-2.05) OR (2.05,3.0)

Locus of Control and Irrational Beliefs

APPENDIX 7

SCATTERGRAMS OF LOCUS OF CONTROL AND DEPRESSION, LOCUS OF CONTROL AND CRITICAL LIFE EVENTS, AND LOCUS OF CONTROL AND IRRATIONAL BELIEFS



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Locus of Control (y) and Depression (x).

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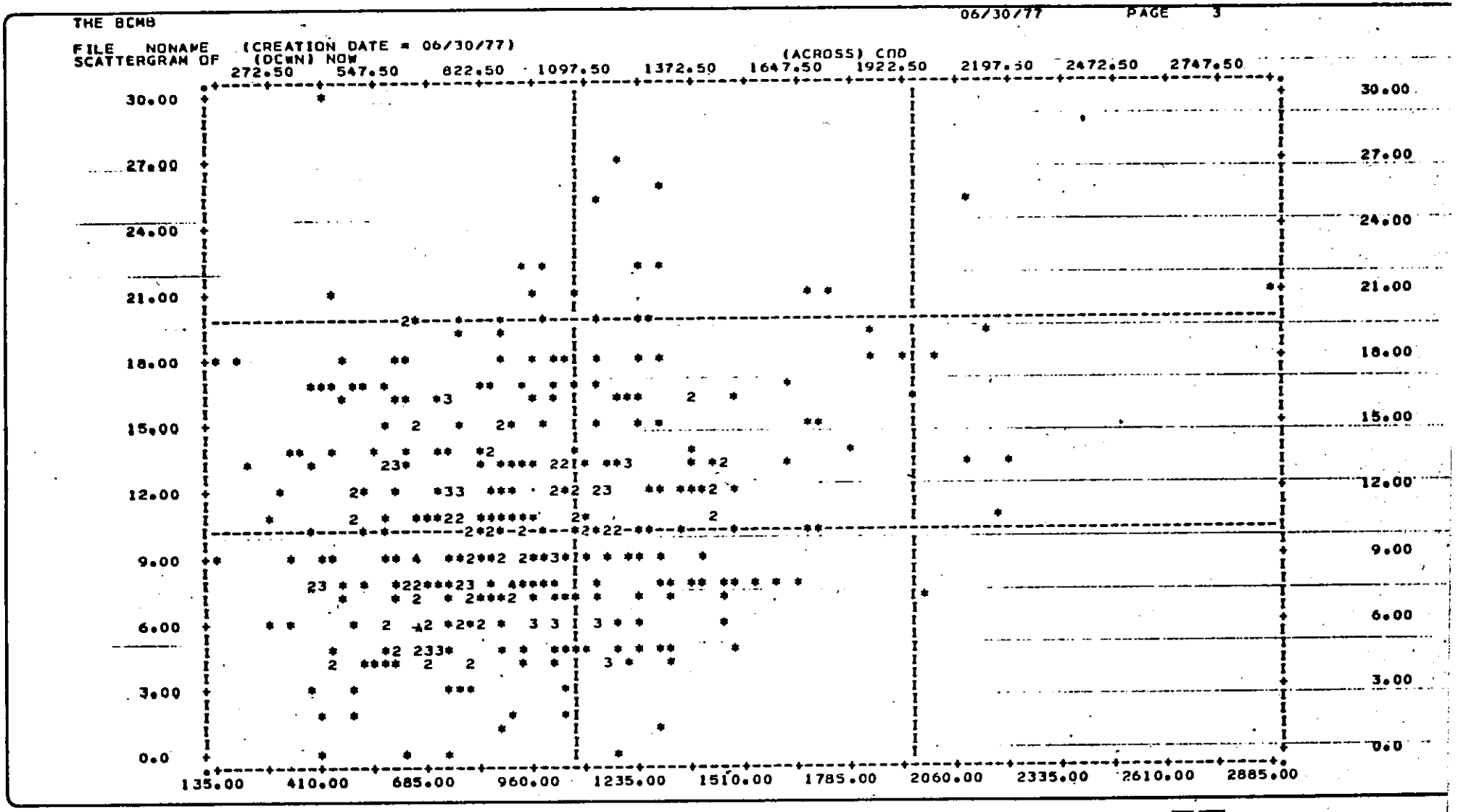
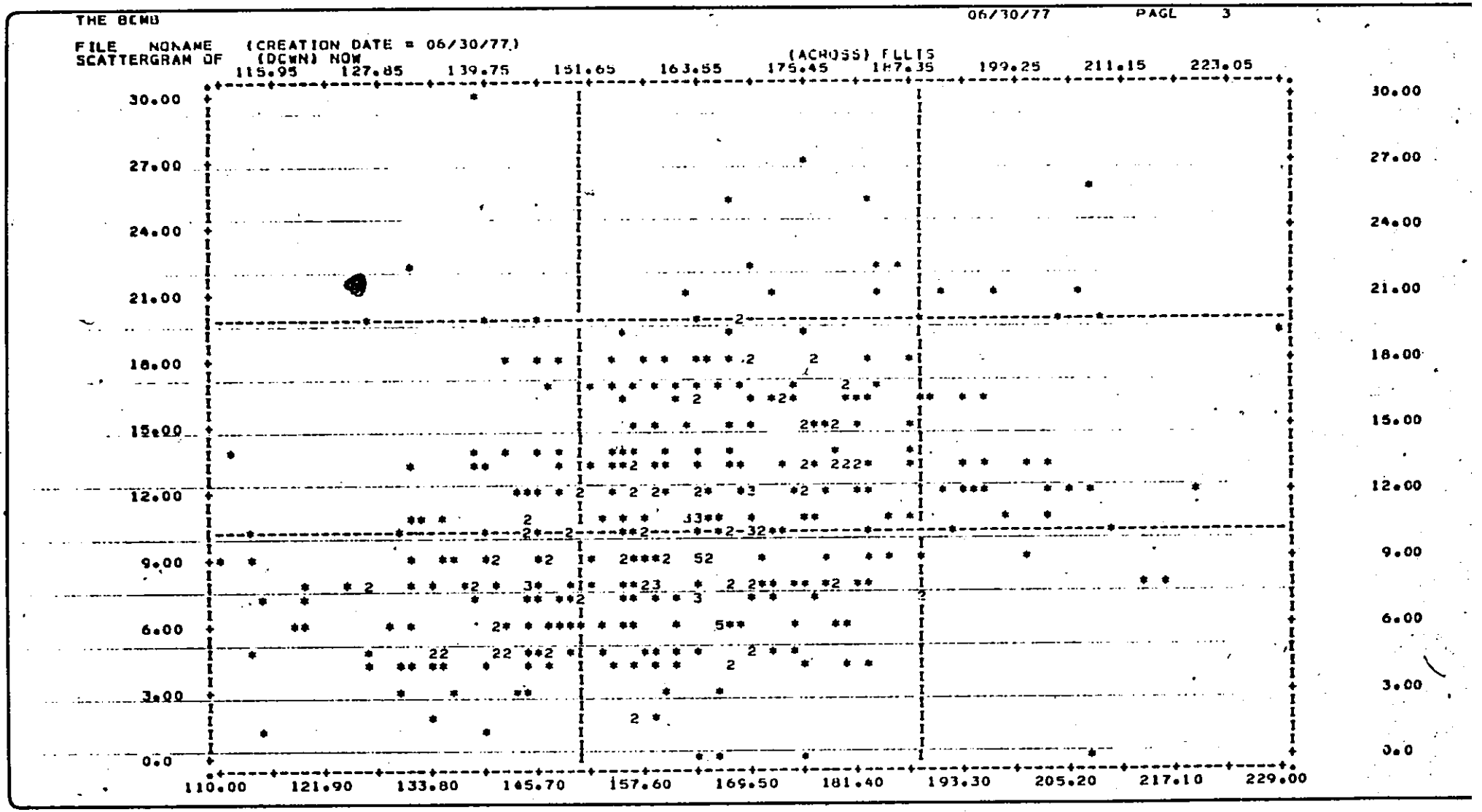


Locus of Control (y) and Critical Life Events (x).



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Locus of Control (y) and Irrational Beliefs (x).

APPENDIX 8

THE BECK DEPRESSION INVENTORY AS A TRAIT MEASURE

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THE BECK DEPRESSION INVENTORY AS A TRAIT MEASURE

The Beck Depression Inventory (BDI) is a clinically derived state self report inventory of depression designed for use in psychiatric populations. The standardized oral instructions request that the subjects answer the items as to how they feel at that moment. The present study utilized the BDI with the following changes: (1) there was a representative sample of the population, and (2) the subjects were asked to answer the items as to how they generally felt (trait measure). In addition to the original reliability and validity data for the BDI presented in Chapter II, the following results provide reliability and construct validity data for the BDI as a trait measure: (1) a Pearson correlation was carried out as a test-retest (3-month period) measure of the trait BDI--the correlation, r (105) = 60, $p < .001$, was significant and indicated that the measure was reliable; (2) z tests of the significance of the difference between the correlations of the BDI and the ANX-IE, AII and CSRQ, respectively, at 3-month intervals (Table 29); and (3) z tests of the significance of the difference between the correlations of the BDI and ANS-IE & AII and CSRQ, respectively, for the present sample and a sample of 30 YM-YWCA residents to whom the standardized BDI instructions were administered (Table 30).

The test-retest coefficient and the nonsignificance on all but one of the z tests of significance of the difference between correlations provide initial reliability and construct validity data, respectively, for the BDI as a trait measure.

Table 29

Coefficients for the z Test of Significance between the BDI and ANS-IE, AII and CSRQ at Three-Month Intervals

Comparison	N	ANS-IE	AII	CSRQ
October administration of BDI	532	.510	.497	.332*
January administration of BDI	105	.485	.492	.110*

*$p < .05$

Table 30

Coefficients for the z Test of the Significance between the BDI and ANS-IE and CSRQ for the Present Sample and the YM-YWCA Sample

Comparison	N	ANS-IE	AII	CSRQ
Present sample BDI	532	.510	.497	.332
YM-YWCA sample BDI	30	.436	.377	.161

Table 31

Beck Depression Inventory Means as a Function of Psychiatric Estimate of Depth of Depression in the Present Sample

Statistic	Psy. Est. of Depth of Depression			
	Normal (0-9)	Mild (10-15)	Moderate (16-23)	Severe (24-63)
n	401	80	36	15
Mean	3.63	12.00	18.67	31.30