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Cognitive Processes in Depression.

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ABSTRACT

Hypotheses derived from Beck's cognitive theory of depression were tested using 60 depressed and non-depressed males and females as measured by the Beck Depression Inventory. Subjects rated their performance before and after they received "positive", "negative", and "neutral" feedback regarding their performance on a social interaction task. They were also asked to recall feedback they received and explain reasons for their post-feedback self-rating. Results showed depressed males and females had a more negative evaluation of present circumstances and poorer memory for feedback. Further, depressed males lowered their self-evaluation upon feedback significantly more than did non-depressed males. In addition, depressed males showed significantly more cognitive distortions in their explanations of post-feedback ratings than did non-depressed males. Results regarding differential response to neutral and positive feedback were not found since subjects apparently perceived all levels of feedback as somewhat negative. Discussion concluded data were partially supportive of Beck's cognitive theory of depression, especially in regard to males. Implications for future research were discussed.

CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Introduction

"Depression now rivals schizophrenia as the nation's number one mental health problem" according to the National Institute of Mental Health (Secunda, 1973). Further, a nation-wide random sample showed that 15% of American adults demonstrated significant features of depression (Becker, 1977). Kline (1964) concluded that "more human suffering has resulted from depression than any other single disease affecting mankind." Further, although many theoretical explanations of this syndrome have been offered (Beck, 1967; Becker, 1974, 1977; Lewinsohn, 1974; Mendels, 1970), an accepted, unifying theory of depression is still to be found (Akiskal and McKinney, 1975). For the interested reader an excellent review of the five major schools (psychoanalytic, behavioral, sociological, existential and biological) theories of depression has been offered by Akiskal and McKinney's 1975 review article. The present study was concerned with the cognitive explanation of depression. Therefore, this review focused on Beck's cognitive triad formulation which recently gained considerable attention (Rizley, 1978; Becker, 1974, 1977; Akiskal and McKinney, 1975).

Another theory which presented a cognitive explanation of depression was Seligman's learned helplessness model. Seligman (1973,

1975, 1976, 1977) stated that non-contingency between behavior and reinforcement leads to learned helplessness in both animals and humans. Although he claimed this phenomena was the same as depression (1975), others (Buchwald, et al, 1978) challenged this point. Further, critics such as Costello (1978) described major methodological and theoretical shortcomings in Seligman's work. Although Seligman responded to these criticisms with a re-formulation of his theory (Seligman, 1978), empirical validation was not presented. Generally it was concluded (Buchwald, et al, 1970) Seligman's theory failed to elucidate specific processes or causes of depression.

In his cognitive theory of depression Beck (1967, 1974, 1976) discussed a cognitive triad wherein the individual interpreted his experiences, himself and his future in a negative manner. In the first dimension, the distorted view of the world, the depressive person consistently perceived that within his environment he was meeting with "defeat, deprivation or disparagement" (1967, p. 255). He also saw himself as unworthy and deficient and thus concluded that he deserved his unpleasant experiences because of a "physical, mental or moral defect in himself" (p. 266). Finally, the depressive individual perceived that these distressing events and his personal defects will be with him indefinitely; thus, he saw his future as extremely bleak. Beck concluded that "the affective state (i.e., depression) can be regarded as the consequence of the way the individual views himself and his environment. . . I have noted that changes in the intensity of depressed feelings follow(ed) changes in the patient's cognitions" (p. 262). Beck stated that individuals in general organized their perception of the world through various schema. The organizations were defined as structures which screen,

code and evaluate information which impinged on the individual. Through this process stimulation from the environment was broken down and assimilated into meaningful categories. These schema varied in regard to their flexibility, openness, permeability and abstractness. Beck contended that specific cognitive schemas were consistent within each clinical syndrome.

Depressed cognitions, according to Beck, typically had several consistent distortions. Arbitrary inference referred to the depressed person's tendency to draw a conclusion from experience without substantiating data. Selective abstraction occurred when the individual focused on one detail which was taken out of context, to the exclusion of other, more important aspects of the situation. The depressed person characteristically drew a general conclusion regarding his worth, ability or performance from one instance, a process which Beck called overgeneralization. Beck described the depressive person's tendency to magnification and minimization which referred to his over-evaluation of his problems and the underevaluation of his assets. Beck added that such distorted cognitions were automatic. He stated that they come into the person's awareness without a process of reasoning or reflection. In addition, Beck stated that the ideas seemed involuntary to the depressed individual: even if he attempted to stop them they continued. The depressive also saw these ideas about himself and his world as highly plausible and thus failed to critically evaluate them. Finally, Beck noted the perseverative nature of such depressive cognition. He stated, "Despite the multiplicity and complexity of life situations, the depressed patient (is) prone to interpret a wide range of his experiences in terms of a few stereotyped ideas" (1967, p. 237). In support of this theory Beck carefully described

his clinical observations. Within his depressed group Beck noted that depressed feelings were associated only with particular thought content. Further, the distortion of cognitions occurred only with ideational material of a depressive content such as personal deficiency. Beck concluded that depressed feelings are brought about by consistent inadequate self-conceptualizations.

Beck's theory of depression was considered by Becker (1976, p. 69) as "one of the most stimulating and provocative on the scene." Further, it generated a number of testable hypotheses. However, outside of Beck's (1967, 1976) anecdotal accounts of support, there were few clinical and/or experimental investigations of his assertions (Hammen and Krantz, 1976).

A vehicle with which to assess Beck's theory indirectly was Romanoff's (1976) attempt to evaluate Rotter's social learning of depression, for both offer similar predictions. Romanoff compared depressed with non-depressed persons and reported that depressed individuals showed lower initial expectancy of success. Further, he stated that following both failure and success feedback depressed subjects maintained lower expectancies for future performance. In addition, depressed individuals showed less change of expectancy across trials. This general pessimism toward future performance was consistent with Beck's theory, as was the depressive's apparent rigidity as shown by his failure to modify expectancies in accord with feedback from his environment. However, Romanoff only tested males, therefore generalization of these findings was limited.

Laughlin (1972) reported his investigation of Beck's cognitive theory of depression which involved a group of depressed and non-depressed hospitalized psychiatric patients. He stated that the non-depressed

group was mixed in regard to diagnostic label. Laughlin had his subjects rate their current performance on a coding task as well as predict their future performance at several stages of task completion. Laughlin hypothesized that depressed patients would rate both current and future performance lower than would non-depressed patients relevant to level of task completion. He failed to find such an effect. However, he found depressed individuals rated their present and future performance lower overall. Further, their initial self-ratings were lower than those of the control group. Possible reasons Laughlin gave for his non-significant results were the heterogeneous nature of his contrast group and the relatively impersonal nature of the performance task.

In another attempt to tap possible cognitive distortions in depression Hammen and Krantz (1976) reported giving 33 depressed and 34 non-depressed women success, failure and no feedback regarding their skill on a social interaction task. They hypothesized that the depressed individuals would respond more strongly to the failure feedback, thus maximizing their perceptions of failure and minimizing their perception of success. They related their findings that depressive women's self-esteem, in general and in regard to areas about which they were given failure feedback, was lower than that of non-depressed women. Further, the depressed women responded to failure feedback with lower expectancy for future performance than did the non-depressed women. Finally, Hammen and Krantz stated that the depressed women did respond differentially as a reaction to failure feedback. Thus, they theorized, the depressive person's response patterns "may represent dysfunctional information-processing strategies that may serve to perpetuate, if not enhance, the feelings of depression." Hammen and Krantz go on to say that although

their findings were "consistent with an interpretation of maladaptive cognitive behaviors, the study fails to elucidate such specific problematic responses as selective inattention, misperception and the like." Further, this data also failed to investigate possible sex differences in depression and cognition. Indeed, in an unselected sample of males and females Deaux (1977) reported that males tended to attribute success to internal factors (such as skill) and failure to external factors (such as luck). However, women showed the opposite pattern in that they credited their successes to external factors and their failures to internal ones. With a depressed population Hammen (1977) reported that following success experiences female subjects sought more positive information about themselves than did male subjects. Therefore, it appeared that in depressed and unselected populations there were differences across sexes in relation to evaluative feedback and cognition.

Flippo (1972) assessed the same general hypothesis that depressed individuals' self-esteem was more powerfully affected by failure than was that of non-depressed individuals. Flippo reported that in order to make the failure feedback more consistent with the type of information people obtained in everyday life he varied levels of ambiguity. He stated his hypothesis was that more ambiguous failure feedback had a greater adverse effect on the self-esteem of depressed as opposed to non-depressed individuals. However, Flippo stated that he failed to demonstrate this relationship and thus concluded that ambiguity may be unimportant in producing change in the depressive's self-esteem. However, he found that following unambiguous failure feedback the depressed person showed lower self-esteem. Further, he hypothesized that the type of failed task (in this case, an intellectual one) may be critical in affecting a

depressed person's view of himself.

There have been few direct tests of Beck's theory. Although Hammen and Krantz (1976) tested specific hypotheses derived from Beck's ideas, their findings do not shed light on mechanisms of cognitive distortions. According to Beck, a depressed individual used various methods to distort information that he received from his environment. Yet in the most direct test of Beck's theory (Hammen and Krantz, 1976) individuals were specifically told that they had failed or succeeded. Thus, there was not opportunity to assess the process that a depressed person used to evaluate his performance critically. Further, subjects in all of the studies cited (Laughlin, 1972; Romanoff, 1976; Hammen and Krantz, 1976; and Flippo, 1972) were asked to predict their future level of performance as an indicator of self-evaluation. Although that tested one part of Beck's cognitive triad, negative perception of future, it left unexplored another important dimension, negative interpretation of experience (i.e., present circumstances). In addition, Hammen and Krantz and Flippo both assessed affects of perceived failure upon the depressed person's self-esteem. Although this was in keeping with Beck's theory, it did not elucidate the information assessment process which contributed to the depressed individual's conclusion regarding his self-esteem.

Hammen and Krantz (1976) concluded that the mechanisms of depressed cognitions must now be explored. Indeed, Beck (1976) stated the nature of such distortions suggested ways to modify therapeutically these depression-enhancing mechanisms. Beck stated ". . .thinking can be unrealistic because it is derived from erroneous premises; behavior can be self-defeating because it is based on unreasonable attitudes.

Thus, psychological problems can be mastered by sharpening discriminations, correcting misperceptions and learning more adaptive attitudes" (1976, p. 20). Further, Beck claimed that increasingly greater numbers of psychotherapists were utilizing cognitive techniques although they maintained allegiance to their respective schools. Beck (1976) concluded that "(in treating depressed patients) specific cognitive and behavioral techniques were most effective in influencing mood and behavior" (p. 264).

Present Study

The purpose of this study was to investigate some central assumptions of Beck's theory which had not yet been tested. First, the automatic or "autonomous" nature of negatively distorted cognitions needed to be established with specific attention directed toward possible sex differences (Hammen and Krantz, 1976). In addition, several of the characteristic modes of distortion, such as arbitrary inference, selective abstraction, and over-generalization had been found in experimental study with depressed subjects (Hammen and Krantz, 1976) yet this result needed to be replicated. Further, it was also necessary to look at the depressive person's assessment of his immediate environment, rather than focus solely on his prediction of the future as did previous research (Laughlin, 1972; Romanoff, 1976; Hammen and Krantz, 1976; and Flippo, 1972), for Beck (1967) theorized that both were negatively distorted. Since the depressed person's expectancies for the future were relatively insensitive to positive feedback (Romanoff, 1976) and since Beck theorized that the depressive distorts present as well as future events, then it was hypothesized that depressed persons would be unresponsive to positive information in assessing

present performance. Through careful examination of specific processes that a depressive individual used in his daily interactions, Beck's theory that depression stemmed primarily from a consistent pattern of automatic cognitive distortions would be tested.

Specifically, it was hypothesized that (1) varied level of ambiguous information about performance on a social skills task would not alter the depressive person's assessment of his performance in a positive direction, although it would differentially affect the self-assessment of the non-depressed individuals (Beck, 1967, 1976; Hammen and Krantz, 1976; Romanoff, 1976). A further prediction was that (2) depressed persons would be less able than non-depressed individuals to repeat feedback accurately about their own performance (Beck, 1967, 1976; Hammen and Krantz, 1976). Also, (3) depressed subjects' success at accurate recall depended upon the level of treatment received. More specifically, (4) those depressed subjects who received ambiguous feedback would make the most errors, positive feedback the next most, and negative feedback the fewest. This hypothesis was consistent with Beck's (1967) theory that depressed individuals distort ambiguous feedback, and, at times, clearly positive feedback, in a negative direction, and that they tended to dwell on negative ideas about themselves. In addition, it was believed that (5) depressed persons' attempts to account for their post-feedback rating and/or to recall feedback would show specific and consistent distortions which will be <u>selective abstraction</u>, <u>arbitrary inference</u>, <u>over-generalization</u>, and <u>magnification</u> and <u>minimization</u> (Beck, 1967; Hammen and Krantz, 1976).

CHAPTER II

METHODS

Subjects

Initially 306 psychology undergraduates were given the Beck Depression Inventory (BDI: Beck, Ward, Mendelson, Mock and Erbaugh, 1961). This scale is presented in Appendix I. From this group of subjects 30 depressed (15 male and 15 female) and 30 non-depressed (15 male and 15 female) subjects were selected. The depressed group consisted of a random sample of those subjects who scored in the clinically depressed range on the inventory, while the non-depressed group was composed of a randomly selected group of those subjects who scored in the non-depressed range. Analysis of the initial subject population in regard to Beck Depression Inventory scores showed 18% were females who fell in the control range (BDI $\leq$ 4), 23% were males in the control range (BDI $\leq$ 4), 14% were females who fell in the depressed range (BDI $\geq$ 10) and 10% were males in the depressed range (BDI $\geq$ 10). Of all females 37% scored in the control range and 28% in the experimental range. Of all males 43% scored in the control range and 19% in the experimental range.

Procedure

Subjects chosen from the initial population were contacted by phone and asked to participate in the second phase of the experiment. They were told that in general this experiment was concerned with how

people handled information at various points in their life as well as a task which measured interview skills of college students. Further, subjects were told that verbatim statements had been transcribed from actual interviews with incoming freshmen. Subjects were then presented with a sample of 50 such statements, each of which was followed by four choices of an interviewer's possible response (See Appendix 2). This method was adapted from Hammen and Krantz's (1976) procedure in which the task related to the assessment of 'therapeutic skill.' The type of task was changed for Hammen and Krantz discovered post hoc that depressed women had a greater interest in pursuing a career as a therapist, and thus may have had a stronger reaction to negative feedback about their related abilities. In order to explore for a similar effect in the present study subjects were asked to rate how much they would like to be a counselor of college freshmen. Subjects were asked to rate their performance on the Counselor Test by responding to a statement: "If your answers were assessed in relation to 9 other students who took this test what rank would you receive?" Subjects then marked one number on a scale of one (best) to ten (worst).

The experimenter then took subjects' answer sheet and left the room for about 10 minutes. At that time she returned and said she was unable to give a specific score, but could tell the subjects the type of personality traits they had by comparing their pattern of responses with norms. This information, she explained, was relevant to counseling skill. Then the experimenter gave subjects a piece of paper with 12 hand-written statements regarding their personality traits. The proportion of positive, negative and ambiguous statements was varied in accord with treatment condition. Levels of feedback were neutral or

ambiguous (6 neutral, 3 negative and 3 positive statements), positive (6 positive, 3 negative and 3 neutral statements) and negative (6 negative, 3 positive and 3 neutral statements). These statements and their valence were generated in the following manner. First, a pool of 100 "personality statements" were derived from test manuals and psychology graduate students. Then a group of 23 subjects were asked to rate these statements according to how much they would like to receive this feedback about their interpersonal skills. Subjects were instructed to rate each statement as something they would like to hear about themselves (positive), dislike hearing about themselves (negative), or have a neutral response to hearing about themselves (neutral). Those 18 items with highest levels of agreement regarding valence were used. In the positive condition 6 statements were used that at least 21/23 subjects ranked as positive. In the negative condition 6 statements were used that at least 19/23 subjects ranked as negative. In the neutral condition 6 statements were used that at least 13 subjects agreed were neutral and which had a relatively even split on positive and negative ratings. See Appendix 3 for a list of the 18 statements from which feedback was drawn.

Subjects then read and heard a list of either mostly positive, or negative or neutral statements about their performance. The experimenter then took the list of statements and told the subject that another variable she was interested in was ability to recall feedback. She asked subjects to write down the 12 statements which they just read about themselves. When subjects recalled as many statements as possible they were asked to rate their performance again on the Counselor Test. Subjects were then asked to write down briefly, but specifically, why

they rated their performance as they just did. Subjects were then carefully de-briefed and interviewed to assess whether this procedure was emotionally unsettling. Depressed subjects then had an opportunity to discuss their current feelings state with the experimenter. During this interaction subjects were given information about the Student Mental Health Center. Several depressed subjects stated they would seek counseling. Finally, subjects were informed that the purpose of the study was to assess the manner in which people handle information at different times in their lives, (e.g., when things were going well as opposed to when things could be going better).

Ethical guidelines regarding the rights of human subjects were followed.

Hypotheses

The following hypotheses were tested:

#1 Depressed and non-depressed subjects' self-ratings would differ significantly as a function of feedback.

#2 Depressed subjects would remember significantly fewer items correctly than would non-depressed subjects.

#3 Valence of feedback would differentially affect depressed subjects' accurate recall.

#4 Depressed subjects would remember the fewest items in the ambiguous condition, more items in the positive condition and the most items in the negative condition. Regardless of differential effects related to feedback, their total recall would still be poorer than non-depressed subjects.

#5 Depressed subjects' reasons for their post-feedback self-rating and/or the type of errors committed would fall into the categories of selective abstraction, arbitrary inference, over-generalization,

magnification and minimization.

CHAPTER III

RESULTS

Anova #1 (Depression by Feedback by Sex) on change scores of self-ratings did not show a significant effect for Feedback by Depression as was hypothesized (see Table 1). Therefore, hypothesis #1 was not supported.

A Sex by Depression interaction was significant ($F=6.61$; $p < .013$) at the .05 level. A Duncan Multiple Range Test (see Table 2) showed that non-depressed males lowered their self-rating significantly less than did depressed males. A main effect for Feedback was also significant ($F=3.46$; $p < .03$) at the .05 level. A Duncan Multiple Range Test (see Table 3) revealed that those subjects receiving neutral feedback lowered their self-ratings significantly less than did those subjects receiving negative feedback.

Anova #1 revealed a trend ($F=2.79$; $p < .07$) toward a Depression by Sex by Feedback interaction. Duncan Multiple Range Test showed several significant differences. These results should be interpreted with caution since, in this procedure, we are working at an overall alpha level of .44. Comparisons revealed that non-depressed males receiving neutral feedback lowered their self-rating significantly less than did depressed males receiving positive and/or negative feedback, and non-depressed females receiving negative feedback. Further, non-depressed

TABLE 1

CHANGE IN SELF-RATING AS A FUNCTION OF

SEX, DEPRESSION, AND LEVEL OF FEEDBACK

Source	DF	SS	F	P
Depression	1	1.35	1.01	0.31
Sex	1	0.01	0.01	0.91
Dep. X Sex	1	8.81	6.61	0.01*
Feedback	2	9.23	3.45	0.03*
Dep. X Fdbck.	2	5.70	2.14	0.12
Sex X Fdbck.	2	0.43	0.15	0.85
Dep. X Sex X Fcbck.	2	7.43	2.79	0.07+

* = Significant at .05
+ = Trend -- .10

TABLE 2

LOWERING OF SELF-RATING AS A FUNCTION OF SEX AND DEPRESSION

Mean	N	Group	Sex
-0.46	15	Control	M*
-0.80	15	Exp.	F
-1.26	15	Control	F
-1.53	15	Exp.	M*

* = Differ significantly from one another at .05

TABLE 3

LOWERING OF SELF-RATING AS A FUNCTION OF POSITIVE, NEGATIVE, AND NEUTRAL FEEDBACK

Mean	N	Feedback
-0.50	20	0*
-1.10	20	+
-1.45	20	-*

* = Differed significantly from one another at .05

females who received negative feedback lowered their self-ratings more so than depressed females who received neutral or negative feedback, and depressed males who received neutral feedback, and non-depressed males in all conditions.

Anova #2 (Feedback by Sex by Depression) for number of correct statements showed a significant main effect ($F= 3.53$; $p < .03$ for one-tailed test) for depression as was hypothesized (see Table 4). Depressed subjects did remember significantly fewer items correctly (Hypothesis #2). A Feedback by Sex interaction was also significant ($F= 5.45$; $p < .007$). Duncan Multiple Range Test (see Table 5) showed that males receiving positive feedback remembered significantly fewer items correctly than did females receiving positive feedback and males receiving neutral feedback.

The hypothesized Feedback by Depression interaction was not found to be significant. Valence of feedback did not differentially affect depressed subjects' ability for accurate feedback recall (Hypothesis #3). Since the interaction was not significant no post-anova procedure was indicated. Therefore, no specific differences were found between depressed and non-depressed subjects in regard to correct recall as a function of feedback (Hypothesis #4).

Inter-rater reliability for statements rated as correct or incorrect was computed by Pearson rho correlational technique. All three raters correlated with one another at the .0001 level of significance ($r_{1,2} = .97$; $r_{1,3} = .87$; $r_{2,3} = .86$).

A post hoc prediction was made that depressed subjects would have a significantly lower initial self-rating as was reported by Romanoff (1967), Beck (1967, 1976) and Laughlin (1972). A 2 X 2 (Sex by

TABLE 4

NUMBER OF ITEMS CORRECTLY RECALLED AS A FUNCTION OF DEPRESSION, SEX AND FEEDBACK

Source	DF	SS	F	P
Depression	1	8.816	3.53	0.033*
Sex	1	2.016	0.81	0.373
Dep. X Sex	1	3.750	1.50	0.226
Feedback	2	0.700	0.14	0.869
Dep. X Fdbck.	2	1.233	0.25	0.782
Fdbck. X Sex	2	27.233	5.45	0.007*
Dep. X Fdbck. X Sex	2	11.100	2.22	0.119

* = Significant at .05

TABLE 5

SIGNIFICANT DIFFERENCES IN NUMBER OF ITEMS RECALLED AS A FUNCTION OF SEX AND LEVEL OF FEEDBACK

Mean	N	Sex	Feedback	
6.8	10	F	+	*
6.7	10	M	0	
6.2	10	F	-	
5.8	10	M	-	
5.4	10	F	0	
4.8	10	M	+	*

* Differ significantly from one another at .05

Depression anova showed this effect to be significant at the .05 level ($F = 4.18$; $p < .045$).

The degree to which subjects would like to be a counselor was investigated in relation to sex and depression with a 2 X 2 anova. No significant differences were found, thus there were no differences between subjects as a function of sex or depression in regard to their desire to be a counselor.

Subjects' reasons for their post-feedback self-rating were first classified as to whether they referred back to feedback, Counselor Test, enduring self-attribute, or other category. There were no significant differences in classification according to depression ($X^2 = 2.317$ with 3 df) or sex ($X^2 = 4.422$ with 3 df). Reasons were then categorized as to whether or not they showed a distortion described by Beck (i.e., arbitrary inference, selective abstraction, over-generalization, magnification and minimization). Depressed subjects demonstrated more of these distortions than did non-depressed subjects ($X^2 = 3.068$; $p < .05$ for a one-tailed test) therefore hypothesis #5 was supported. Fischer's test for exact probability completed on males only revealed that depressed males showed significantly more distortions than did non-depressed males ($p < .05$). Fischer exact probability computed for females only indicated that there was no significant difference between number of distortions as a function of depression ($p = .28$). Types of errors were categorized as to whether they were omissions, additions or distortions. All subjects showed errors of omission. Chi-square was computed to see if presence of additional type of error (addition or distortion) differed across level of depression or sex. No significant difference was found for depression, however males showed significantly more addi-

tional type errors than did females ($x = 11.862$; $p < .001$). Inter-rater reliability of categorization of reasons for self-rating and types of errors was computed by Cochran q test for related samples. Ratings differed at about a .50 level of significance (.33; p .50 = .46), which suggests differences were at about chance level.

CHAPTER IV

DISCUSSION

This study sought to demonstrate empirical support for several aspects of Beck's (1967, 1976) cognitive theory of depression. Specifically, it was expected depressed subjects would show less positive change in self-rating upon receipt of several levels of ambiguous information regarding performance on a social skills task. Further, it was predicted depressed individuals would be less able to repeat feedback accurately; and number of inaccuracies would be dependent upon valence of feedback received. Errors in recall and/or reasons for post-feedback self-ratings were expected to show cognitive distortions as described by Beck (1967, 1976).

Results are partially supportive of Beck's theory, particularly for males, in regard to depressed individual's negative assessment of himself, and particular cognitive deficits. However, attempt to find depressed persons' reaction to positive and neutral information was unsuccessful because of unanticipated subjects' response to the manipulation. Subjects receiving the negative condition lowered their self-rating significantly more than did those getting the neutral condition ($\bar{x}$ Neg = -1.45 vs. $\bar{x}$ Neut = -.5) thus it is assumed subjects perceived and responded to the negative feedback as such. Further, change scores for the neutral condition were close to zero, yet in the negative direc-

tion. Thus, subjects apparently saw this information as mildly negative. Positive feedback, however, produced more negatively directed change scores than did neutral feedback ($\bar{x}$ Pos. = -1.1 vs $\bar{x}$ Neut. = -.5). Although this difference was not statistically significant, direction of change scores in the positive condition was in the opposite direction than expected. Subjects reacted to intended positive feedback as though it were more negative than the neutral feedback. Thus, it seems subjects responded to three levels of perceived negative feedback. Indeed, for the purpose of this discussion we may operationally define the valence of feedback as negative when subjects respond to it with lowered self-ratings. It is noteworthy that statements which comprised the positive condition had the highest consensus regarding valence (Pos. = 21/23; Neg. = 19/23; Neut. = 13/23) in the initial ranking. Thus, it is assumed that the specific statements were seen as positive. An interpretation of the negative reactions to these statements was the ratio (6 positive, 3 negative and 3 neutral) was inappropriate. It seems likely that in order to perceive feedback as positive one must be presented with almost all positive data and little to no negative information.

It is concluded that depressed males showed a lowering of self-evaluation when they received three levels of perceived negative feedback, a finding which is consistent with previous research (Beck, 1967, 1976; Hammen and Krantz, 1976; Romanoff, 1976; Flippo, 1972). However, absence of no-feedback control limits confidence in interpreting these results, for reduction of self-evaluation by depressed males may be unrelated to receipt of feedback, per se. Yet, this decrease in self-assessment suggested that these males may have had

a negatively distorted cognitive set, at least as compared to non-depressed males. Thus, they became more harsh in their re-assessment of themselves in face of the same stimuli.

Presence of cognitive distortions in depressed males' reasons for post-feedback self-rating added further support to Beck's theory (Beck, 1967, 1976) and others' (Hammen and Krantz, 1976) findings, but only in regard to males. Since depressed males showed evidence of a possible negatively distorted cognitive set, yet females did not, it may be that only depressed males processed data in the manner described by Beck. However, other data testing only females (Hammen and Krantz, 1976) suggested this is not true. Another interpretation arose from examination of characteristics of experimental groups in regard to gender. Analysis of initial population showed males who fell in the experimental range (BDI $\geq$10) represented only 19% of the total male population whereas non-depressed males (BDI $\leq$4) represented 43% of all males. However, in the female population 28% were depressed and 37% were non-depressed. Thus, it seemed depressed males were a more deviant population, in terms of their representation in the total group, than were depressed females, although their BDI scores were similar. Since females reportedly score somewhat higher than males on the BDI (Beck, 1967) perhaps a male who gained a comparable BDI score to a female was actually more depressed. Thus, the two depression by sex interactions may have actually represented a "level of depression moderated by sex" effect, where the more depressed subjects (i.e., experimental males) displayed a negatively distorted cognitive set but mildly depressed subjects (i.e., experimental females), as well as control subjects, did not. Hammen and Krantz (1974) found cognitive distortions in depressed women who had a

BDI score somewhat higher than those in this study (14.5 vs. 12.6). Further research varying levels of depression and sex should investigate this possibility.

Although depressed subjects remembered fewer items correctly, analysis of error type suggested they showed no more additions or distortions than those of control subjects. Thus, in view of their written attempt to recall date there was no evidence of cognitive distortions of specific information. Therefore, differences could have been attributed to the relative "poorer memory" of depressed individuals. Indeed, there was some data (Henry, et al., 1973) which suggested depressed individuals have relatively normal short-term, yet poorer long-term memory. Depressed subjects in this study could have distorted information and then not reported such data for they suspected it was incorrect. However, we had no reason to attribute the number of correctly recalled statements to any process more complex than simply forgetting.

Depressed subject's lower initial self-rating of present performance was consistent with Beck's theory (Beck, 1967, 1976) that depressed individuals had a negative perception of present circumstances. This finding should be interpreted with caution since it was a post-hoc prediction.

An unanticipated sex difference, independent of level of depression, was that males receiving positive feedback remembered significantly fewer items correctly than females getting positive feedback and males getting negative feedback. The difference between males and females in the positive feedback group was attributable to males forgetting more positive items. Depressed and non-depressed males apparently rejected positive information about themselves, in particular, and generally were

better able to remember mostly negative feedback. This seemed inconsistent with Deaux and Farris' (1977) finding that males evaluated their performance more favorably than females and attributed success to their ability more often than did females. However, the speculated subject perception of feedback as three levels of negative information, complicated by the high consensus regarding positive valence of specific items, made clear interpretation of these results unlikely.

Interpretation of failure to find a feedback by depression effect for number of statements recalled was also confounded by subjects' apparent negative perception of all feedback levels. However, it was concluded that no effect was shown for three levels of perceived negative feedback upon depressed individuals' memory for that data.

In summary, depressed males and females showed a more negative evaluation of present circumstances as predicted and suggested by others (Beck, 1967, 1976; Romanoff, 1976, Laughlin, 1976). Further, they had poorer memory for feedback, consistent with Beck's contention (1967, 1976) that depressed individuals handled information inadequately. In addition, depressed males lowered self-evaluation upon receiving perceived negative feedback as others (Beck, 1967, 1976; Romanoff, 1976, Hammen and Krantz, 1976; Flippo, 1972) have found or possibly upon re-assessment of their performance. Further, depressed males showed specific cognitive distortions upon explanation of their self-assessment process as Beck (1967, 1976) predicted for both sexes. Results regarding differential response to neutral and positive information were not found since subjects perceived all levels of feedback as negative.

CHAPTER V

CONCLUSIONS

The results suggested that as a depressed person operates in the world he or she assumes that they are doing poorly, as Beck (1967, 1976) reported. Further, he or she fails to remember data received from outside sources upon which he or she could test self-perceptions. Thus, this individual may reach the process of self-assessment with less information than non-depressed persons have available to them. The depressed male may use this limited data, along with other perceptions and long-standing ideas about his worth, to evaluate himself with a negatively distorted inferential set. Thus, his initial low perception of himself is confirmed.

Further research might first ascertain what type of feedback is perceived as positive information by depressed and non-depressed individuals and then investigate how this feedback affects self-assessment and memory. In addition, differences between depressed males' and females' cognitive processes might be investigated by examining effect of depression level (extreme vs. mild) and gender upon cognitive distortions. In order to gain more information about negative cognitive sets a structured in-depth interview following

receipt of information and self-assessment might be useful.

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A P P E N D I C E S

APPENDIX I

COUNSELOR TEST

1. My father wants me to major in pre-law but I'm interested in geology.

A) You need to decide what's right for you.
B) You and your father are having a conflict.
C) Well, you'll have plenty of time to make that decision before you leave J.D.
C) How might you resolve this problem?

2. I'd like to live in an apartment but I'm afraid my roommates would keep me from studying.

A) That would be too bad.
B) What's wrong with living in the dorm?
C) If you find that's the case, what would you do?
D) Alot of students have that problem.

3. I've never been away from home before.

A) You must be lonely.
B) Are you lonely?
C) It'll probably be alot of fun.
D) It's time for you to cut the apron strings.

4. I'm not sure Im ready for college.

A) That's an important issue.
B) I wasn't sure of that myself, but it all worked out.
C) What might you be ready for instead?
D) What can you do to get ready?

5. My girlfriend is a year younger and so she's still in high school in my hometown.

A) You must miss her.
B) There's plenty of other girls here.
C) You'll probably be so busy studying you won't have time to miss her.
D) Do ya'll have any plans for the future?

6. Unless I get my classes scheduled just as I asked for I won't be able to work afternoons.

A) That could be a real problem.
B) Did you write that information down on your request form?
C) Maybe you could find another job, or drop some courses.
D) Do you really need to work?

7. I'm afraid I'll flunk out.

A) Alot of students are afraid of that, though few actually do.
B) You would be very upset if you flunked out.
C) What might you do then?
D) What can you do to keep from flunking out?

8. If I want to get accepted into medical school I need to make a 4.0 every semester.

A) That's pretty unlikely.
B) Those are some big expectations to place on yourself.
C) I might be scared if I felt I had to do that well.
D) I don't think that you'll need to do that well to be accepted.

9. I needed to take two courses that were offered at the same time to get out of Junior Division on schedule.

A) I know the feeling.
B) You must be frustrated.
C) The university really needs to change that system.
D) Are you sure about that?

10. I really don't like my English teacher.

A) Why not?
B) Is he/she really so bad?
C) That could make for a long semester.
D) I bet you're disappointed.

11. I already want to drop my biology lab.

A) You shouldn't do that.
B) How come?
C) What other alternatives do you have?
D) Let's see if you can stick it out.

12. I don't know anyone here.

A) You must be lonely.
B) How could you make some friends?
C) There are alot of activities at the Union
D) I'll bet you wish you were home.

13. I've applied for two loans but I haven't heard from either of them.

A) Are you sure that's legal to apply for two?
B) Did you check back with the Student Aid office?
C) I've had mixed feelings about borrowing money, myself.
D) I bet you'll be glad when the money comes in.

14. I want to live at the fraternity house but my parents want me to live in a dorm.

A) Why do you suppose they want that?

B) Could you study well in the fraternity house?
C) You must be irritated with them for not understanding.
D) I imagine you've had a few doubts about that too.

15. If I don't get accepted into law school I don't know what I'll do.

A) That's still a long way off.
B) Are you already sure you want to be a lawyer?
C) So what if you don't get accepted, there's plenty of other things to do.
D) You'll really be disappointed if you don't get accepted.

16. I don't know anything about the campus.

A) I'll give you some pamphlets before you go.
B) What would you like to know?
C) Why don't you have someone show you around?
D) Don't worry, by mid-term you'll feel right at home.

17. My ACT scores were really pretty good.

A) Good for you!
B) Did you get advanced standing placement?
C) I'll bet you could qualify for a scholarship.
D) What were they?

18. The food in my dorm is horrible.

A) I remember how bad ours was too.
B) Maybe you could eat out more.
C) You'll get use to it.
D) Students really should get organized and complain about that.

19. I never find time to study.

A) Don't you think it's a little early in the semester to worry about that?
B) Have you made yourself a schedule?
C) It's good you're thinking about that so soon.
D) Don't worry. Once your first tests are announced you'll start.

20. I'm glad I came here instead of going to a small college close to home.

A) There's alot more excitement here.
B) Are you maybe a little worried too?
C) You'll get a better education here.
D) I'm glad you're pleased.

21. I miss my family.

A) It's really hard to be away from home.
B) When are you going to visit?
C) Tell me about them.
D) I missed my family too when I first came here.

22. My classes are so boring I can't stand to go.

A) You really should go anyway.
B) They haven't had time yet to really get off the ground.
C) Aren't any of them interesting?
D) You must feel frustrated.

23. I just met my roommate but already I like her alot.

A) Great!
B) It's really important to room with someone you like.
C) I hope it keeps on working out well.
D) Before you met her, were you afraid that you might not get along with her?

24. I want to go home this week-end but I've got too much work to do.

A) That's a shame.
B) You could go anyway.
C) You know, if you wait until you're not too busy you'll probably have a better time.
D) What could you do for fun if you stayed here?

25. We're covering stuff in my English class that I learned in high school.

A) Then you must be doing pretty well.
B) I'll bet you're bored.
C) Well, just stick with it until the class moves on to something new.
D) That happened to me too, I was really frustrated.

26. I was surprised how young and friendly the teaching assistant was in my geology class.

A) Sometimes they're easier to talk to than the professor.
B) You're lucky to have someone you like.
C) Are you afraid of your professor?
D) It'll make the class easier.

27. The only reason I came to college was to party.

A) Do you want your degree?
B) Alot of students start out that way.
C) I hope you change your mind.
D) You'll settle down when you're ready.

28. I really want to be a nurse but I'm terrible in chemistry.

A) Have you tried a tutor?
B) Maybe college chemistry will be easier for you than high school chemistry.
C) What other careers are you interested in?
D) Let's wait and see how you do at mid-term.

29. My brother flunked out his first semester.

A) How did that happen?
B) You're not your brother.
C) Are you afraid you'll flunk out too?
D) How do you suppose you'll do?

30. I'm really not used to having so little money.

A) I really am tired of my budget too.
B) You know I got a part-time job which really helped.
C) Let's go over your budget and see if we can work it out better.
D) Have you thought about asking your parents for more money?

31. I can't decide if I should take an Art course or not.

A) Do you like Art?
B) What are your other options?
C) Why not? It might be fun.
D) Would it apply toward your degree?

32. I wanted to take a sophomere level history course but they wouldn't let me.

A) That's a really stupid rule.
B) I'll bet you're mad about that.
C) Well, you'll be able to take it next year.
D) You know, it might have been real difficult.

33. I'm thinking about calling my parents to tell them I'm dropping out.

A) That's a big decision to make so early in the semester.
B) Why don't you call them and just talk it over?
C) Do you suppose they'll be mad?
D) You sound like you're giving up.

34. Were you afraid of flunking out?

A) At times.
B) Not really, I felt like I could do okay.
C) No, I've always done well in school.
D) Are you afraid now?

35. So far things are really going well.

A) Are you sure about that?
B) I'm glad to hear it.
C) Tell me more about what's going good.
D) Are you surprised?

36. The guys in the room next door play their stereo so loud I can't stand it.

A) Have you asked them to turn it down?

B) Have you told the dorm counselor?
C) Some people are really inconsiderate.
D) How are you going to study?

37. I'm invited to a party this week-end, but I only know one person who'll be there.

A) Well, you'll have a chance to meet more people.
B) You sound a little bit scared about going.
C) I wouldn't go if I thought I'd have a bad time.
D) Do you want to go?

38. I really didn't want to come here today but my advisor said I had to.

A) I'm sorry to hear that you don't want to be here.
B) Well, maybe we could make this meeting short.
C) Then let's not meet.
D) Now that you're here what do you want to talk about?

39. I can hardly wait til Thanksgiving break.

A) But you just got here.
B) That's still a long way off.
C) It'll be here before you know it.
D) Let's concentrate on what you'll be doing between now and then.

40. My parents will be real disappointed if I don't do well.

A) What do you mean by "do well"?
B) You're not living to please your parents.
C) I'll bet you'll be disappointed in yourself.
D) Just do the best you can.

41. I'm really having so much fun I don't want to go home to visit.

A) Sounds like you're making a good adjustment.
B) You may start to get homesick.
C) Why go home unless you want to?
D) I'll bet your family would be glad to see you.

42. I've got a theme due in English tomorrow and I can't get started on it.

A) What are you writing about?
B) Let's write up an outline to get you started.
C) I've found going to the library helps me work.
D) You don't have much time left.

43. I need to decide between a Business or Pre-law curriculum.

A) Is there much over-lap between the two?
B) What do you want to do when you get out?

C) You really don't need to decide until after you're out of junior division.
D) Tell me the advantages and disadvantages of each.

44. I keep skipping class and I'm already behind in my work.

A) Why are you doing that?
B) I think you'll need to develop some self-discipline.
C) Do your friends do that too?
D) Try going to class every day next week and see how you do.

45. I failed my first lab quiz.

A) I bet you're disappointed.
B) Did you study?
C) You'll have time to bring your grade up.
D) Have you talked to your teacher?

46. I can tell my Spanish teacher doesn't like me.

A) How do you know that?
B) You must not like to go to class then.
C) So what" You're in the class to learn, not to be liked.
D) What could you do differently to improve the relationship?

47. I wonder if I could get a scholarship?

A) Go talk to Student Aid.
B) How were your high school grades?
C) Let me see if I can find you some applications.
D) Don't get your hopes up, university funds are hard to come by.

48. Do I have to come back here to talk with you?

A) No, not unless you want to.
B) Do you want to?
C) I'll be glad to talk to you if you'd like to come back.
D) Have you gotten anything out of this so far?

49. My roommate always bothers me when I'm trying to study.

A) I bet you get tired of that.
B) What have you done about that?
C) Tell her how you feel.
D) Let's figure out what you can do about that.

50. I can't seem to get any dates.

A) How have you gone about trying to get dates?
B) Alot of people feel that way at first.
C) You must feel frustrated.
D) Don't worry about it, you'll meet people in your classes.

If your answers were assessed in relation to nine other students who took this test, what rank would you receive? (Circle the rank below)

1 2 3 4 5 6 7 8 9 10

10 = Best
1 = Worst

How much would you actually like to become a college counselor? Circle that point on the seven point scale that corresponds to your degree of liking.

1	2	3	4	5	6	7
Very much		I'd like it		Not particularly		Not at all

APPENDIX II

BECK DEPRESSION INVENTORY

Choose one statement for each item

A. 1. I do not feel sad.
2. I feel blue or sad.
3. I am blue or sad all the time and I can't snap out of it.
4. I am so sad or unhappy that it is very painful.
5. I am so sad or unhappy that I can't stad it.

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

C. 1. I do not feel like a failure.
2. I feel I have failed more than the average person.
3. I feel I have accomplihsed very little that is worthwhile or that means anything.
4. As I look back on my life all I can see is a lot of failures.
5. I feel I am a complete failure as a person.

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

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

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

G. 1. I don't feel disappointed in myself.
2. I am disappointed in myself.
3. I don't like myself.
4. I am disgusted with myself.

H. 1. I don't feel I am any worse than anybody else.
2. I am very critical of myself for my weaknesses or mistakes.
3. I blame myself for everything that goes wrong.
4. I feel I have many bad faults.

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

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

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

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

M. 1. I make decisions about as well as ever.
2. I am less sure of myself now and try to put off making decisions.
3. I can't make decisions any more without help.
4. I can't make any decisions at all any more.

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

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

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

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

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

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

T. 1. I am no more concerned about my health than usual.
2. I am concerned about aches and pains or upset stomach or constipation or other unpleasant feelings in my body.
3. I am so concerned with how I feel or what I feel that it's hard to think of much else.
4. I am completely absorbed in what I feel.

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

APPENDIX III

Positive

1. Others may find you helpful.
2. You are realistic in your approach to life.
3. You're probably in touch with your own feelings.
4. You're good at thinking problems through.
5. You are dependable.
6. You seem to be responsible.

Neutral

1. You probably are persevering in your relationships with others.
2. You may disregard authority at times.
3. Others probably find you matter-of-fact.
4. You tend to make a fair amount of statements to others.
5. You may come across as somewhat conservative.
6. You come across as being moderate.

Negative

1. You seem somewhat immature.
2. You apparently have little confidence in yourself.
3. You seem undependable.
4. You seem to get rather confused as you try to respond to others.
5. You're somewhat stereotyped in your thinking.
6. You are unresponsive to people's needs.

VITA

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EXAMINATION AND THESIS REPORT

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Major Field: Psychology

Title of Thesis: Cognitive Processes in Depression

Approved:

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Major Professor and Chairman

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EXAMINING COMMITTEE:

Date of Examination:

July 17, 1979