1996

Development of Depressive Encoding Dispositions: Self-Perpetuation of Biases and the Congruency Effect

Mariana C. Belvedere
Loyola University Chicago

LOYOLA UNIVERSITY CHICAGO

DEVELOPMENT OF DEPRESSIVE ENCODING DISPOSITIONS: SELF-PERPETUATION OF BIASES AND THE CONGRUENCY EFFECT

A THESIS SUBMITTED TO

THE FACULTY OF THE GRADUATE SCHOOL

IN CANDIDACY FOR THE DEGREE OF

MASTER OF ARTS

DEPARTMENT OF PSYCHOLOGY

BY

MARIANA C. BELVEDERE

CHICAGO, ILLINOIS

MAY, 1996

ACKNOWLEDGMENTS

I wish to express my gratitude to my thesis committee members, Jeanne Zechmeister, Ph.D., and Thomas Petzel, Ph.D., for their guidance and support during the course of this project. In addition, I would like to acknowledge Mark Schneider for valuable feedback in the early stages of this work. I also would like to acknowledge Kim Porter, Mark Miller, and Brenda Huskey for their collaboration with data collection. Special thanks are extended to Samer Hasan for his encouragement. Finally, I thank my sister, Florencia Belvedere, and my parents, Juan Carlos and Marta Belvedere, for their patience, support, and love. It is to them that this thesis is dedicated.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION AND REVIEW OF RELATED LITERATURE

The last two decades have witnessed a substantial amount of research designed to investigate psychological aspects of depression; in particular, the role of cognitive factors has been a prominent focus (Gotlib & McCabe, 1992). Gotlib and McCabe (1992) claim that this increased interest in cognitive aspects of depression is due mainly to Beck's theory of depression. Beck's model focuses on three aspects of cognition commonly observed in depressed persons: the "cognitive triad," cognitive distortions or faulty information processing, and negative self-schemata (Beck, 1967, 1976).

The cognitive triad refers to the idea that depressed individuals regard themselves, their future, and their experiences in an idiosyncratic, negative manner (Beck, 1983). They view themselves as defective, inadequate, or deprived, often attributing unpleasant experiences to a psychological, moral, or physical defect in themselves. Also, depressed individuals exhibit a negative view of the future, expecting their current difficulties to continue indefinitely (Beck, 1983). They anticipate hardship and frustration, and they predict failure in future tasks. In addition, depressed persons have a tendency to interpret their experiences in a negative way, viewing the world as making excessive demands and preventing them from reaching their life goals (Beck, 1983).

According to Beck (1976), the second aspect of cognition in depressed persons involves faulty information processing, or cognitive distortions. Depressed individuals tend to draw negative conclusions about situations, to focus on negative aspects of situations, and to exaggerate the significance of negative experiences. Finally, the third aspect postulated by Beck (1976) states that depressed persons exhibit negative schemas. Schemas are cognitive structures that consist of a person's fundamental beliefs and assumptions (Beck & Weishaar, 1989). Depressive schemas are theorized to be rigid, consisting of inappropriate beliefs or attitudes about the individual and the world, and they often constitute perfectionistic standards by which the individual judges him- or herself (Gotlib & McCabe, 1992). These schematic beliefs can be latent, or outside of conscious awareness, and they tend to be activated by stressful environmental events. Furthermore, according to Beck, people who have negative schemas are more likely to get depressed. Thus, the affective, behavioral, and physiological symptoms of depression are considered to be consequences of schema-based negative information processing (Gotlib & McCabe, 1992). In sum, particular ways of processing information are theorized to cause depression.

Encoding Biases

Perception involves interpreting environmental stimuli using existing knowledge structures (often described as schemas). Human perceptual processes depend to a large extent on learned, inferential encoding "rules" that impose preexisting categories in order to interpret newly encountered stimuli (Lewicki, Hill, & Sasaki, 1989). Because stimuli frequently do not match the categories very well, the role of preexisting categories or schemas may become particularly important. Perception depends not only on the objective characteristics of the stimulus, but also on the preexisting encoding rules or categories that the perceiver uses to translate the stimulus into subjectively meaningful terms. These encoding processes have been demonstrated in several studies using different stimulus materials, including pattern recognition (e.g., Posner, Goldsmith, & Welton, 1967) and person perception (e.g., Higgins, King, & Mavin, 1982). More recently, several studies have focused on the nonconscious acquisition of information from the environment and its influence on ensuing encoding processes (Lewicki, 1986a, 1986b; Lewicki, Hill, & Bizot, 1988).

Lewicki (1986b), for example, exposed participants to slides of young women's faces paired with brief descriptions of their personality. The women differed in the length of their hair (short vs. long), while the personality descriptions either focused on the women's kindness or capability. There were two covariation conditions: Long-haired women were described as kind while short-haired ones as capable (condition I), or long-haired women were identified as capable while short-haired ones as kind (condition II). Participants were exposed to either condition during the learning phase of the study, and were later asked about the kindness and capability of a different set of stimulus persons.

Lewicki (1986b) hypothesized that, if the information about the covariation was processed and registered during the learning phase, this would result in an increase of processing time for subsequent judgments containing information relevant to the covariation (e.g., being asked about the kindness of a long-haired woman in condition I). This hypothesis is based on the reasoning that, when individuals find and retrieve relevant information from memory in trying to make judgments, the examination of that information will increase response time (Glucksber & McCloskey, 1981; cited in Lewicki, 1986b). The results obtained conformed to this prediction. Although individuals were unable to articulate the correct covariation between the women's visual and personality characteristics when interviewed after the task, they seemed to "learn" about this co-occurrence and to use this knowledge in subsequent judgments. This learning was demonstrated in their "correct" judgments of long-hair and short-hair women in terms of kindness and capability ratings.

As a result of this inferential process at encoding, the final representation of a stimulus that is encoded and stored in memory consists of both "objective" features of the stimulus (i.e., characteristics actually present in the external world and directly perceived by the individual) and "subjective" features (i.e., characteristics not present or not directly perceivable but inferred by the individual using the inferential category) (Lewicki et al., 1989). Thus, from the example above, long hair would be considered part of the objective stimulus, and the inference about kindness or capability would be a subjective feature based on the encoding process. Furthermore, the human memory system does not seem to distinguish inferred characteristics from directly perceived ones (Hill, Lewicki, Czyzewska, & Boss, 1989; Hill, Lewicki, Czyzewska, & Schuller, 1990; Lewicki et al., 1989). As Hill, Lewicki, and Neubauer (1991) note, an important implication of this phenomenon is that inferential rules that control the encoding processes can "fabricate" self-supportive evidence. Because the encoding rules develop and become stronger as a function of the amount of stimuli interpreted as consistent with the rules (Lewicki et al., 1988), the lack of differentiation between actually perceived and inferred elements implies that encoding rules may gradually develop in a self-perpetuating manner (Lewicki et al., 1989). Thus, for example, long-haired women may be perceived as kind despite objective, stimulus-bound evidence for this judgment. Lewicki et al. (1989) describe this occurrence as an encoding "bias."

Studies of encoding biases. Hill et al. (1989) investigated the process of encoding biases with different stimulus materials, including matrices of digits and silhouettes of persons. Results indicated that participants nonconsciously acquired an encoding bias during the learning phase of the experiment, which increased in strength during the testing phase as they made judgments for ambiguous material (i.e., stimuli that were neither consistent nor inconsistent with the covariation). Lewicki and his colleagues (1989) examined this self-perpetuating process by exposing participants to computer-generated brain diagrams, in which the percentage of a particular character making up the diagram covaried, in a nonconsciously-salient manner, with a verbal description of the person. Specifically, brain diagrams contained either 13% or 17% of ASCII character 178. During the learning phase of the study, these diagrams were explicitly identified as intelligent or not intelligent (i.e., 13% brain diagrams were identified as intelligent and 17% diagrams as not intelligent for one half of the participants, while the opposite covariation was true for the remaining participants). During the testing phase, participants saw additional diagrams with no explicit description and were asked to rate the intelligence of the individuals to whom the brain scans belonged. Lewicki et al. (1989) found that participants rated "intelligent brain scans" increasingly as more intelligent and "nonintelligent brains scans" increasingly as less intelligent, despite participants' inability to articulate the nature of the covariation. These results suggest that participants acquired the new encoding bias and that this bias became stronger as they rated ambiguous material.

In addition, research findings indicate that the encoding rules that develop through the self-perpetuation process can be independent of or even inconsistent with the individual's knowledge that can be articulated. For example, Hill, Lewicki, and Neubauer (1991) interviewed participants after the study and found that, despite the accuracy of their ratings, participants were unable to describe the actual covariation manipulated in the learning phase, or gave incorrect reasons (e.g., "overall shape" of the brain scan) for their ratings.

The process of self-perpetuating encoding suggests important implications for mental illness. Specifically, this process may contribute to the development of erroneous and irrational interpretive biases such as those observed in depression and other mental disorders (Hill et al., 1991).

Encoding Biases and Depression

Beck (1967) proposed that depressed individuals seem to show an unconscious negative perceptual bias that leads to an overall pessimistic view of themselves, their experiences, and the future. Depressives are frequently regarded as perceiving themselves and their environment in a negative fashion. Studies have consistently demonstrated that depressed individuals exhibit pessimistic and hopeless beliefs, and that they show a general negative bias in their attributions about events (e.g., Abramson, Metalsky, & Alloy, 1989; Alloy & Ahrens, 1987; Riskind, Rholes, Brannon, & Burdick, 1987). Given the findings of these studies, Hill et al. (1991) concluded that negative encoding rules appear to be generally more accessible in individuals with depressive symptoms (i.e., these individuals exhibit a readiness to perceive information in a negatively biased manner).

Although the existence of a general negative bias and its association with depression is widely accepted, little is known about the cognitive origins of these negative biases and why they gradually develop into pervasive features of the way in which a depressed person interprets reality (Beck, Rush, Shaw, & Emery, 1979). According to Hill et al. (1991), self-perpetuation processes may provide a partial answer to this question. During the early stages of depression, even a slight increase in the readiness to use negative interpretive rules (e.g., "nothing will ever work out for me") may drive the individual to encode ambiguous stimuli as more negative than they actually are. Thus, this increased accessibility of negative encoding categories may prompt depressed individuals to show a stronger tendency to self-perpetuate encoding biases involving negative information.

Indeed, Hill et al. (1991) found evidence for the possibility of such a mechanism within depression. They exposed depressed and nondepressed participants to a series of face diagrams containing a nonconsciously-salient covariation between a facial feature and either a negative or positive personality characteristic accompanying each diagram. Specifically, the location of the nostrils in the face diagrams covaried with an accompanying personality characteristic describing life satisfaction (i.e., "generally satisfied" or "generally unsatisfied"). Thus, in one experimental condition, low nostril faces were always described as satisfied and high nostril faces as unsatisfied; in the other experimental condition, low nostril faces were always described as unsatisfied and high nostril faces as satisfied. After this learning phase, participants rated the degree of satisfaction of 80 new face diagrams which did not contain any information supportive of the covariation. That is, personality information was not provided during the testing phase. Hill et al. (1991)

expected that depressed participants would exhibit the self-perpetuating process, particularly for "unsatisfied" covariations (i.e., when rating faces that were expected to be classified as unsatisfied according to the respective encoding rule), due to the increased accessibility of the negative personality feature (i.e., dissatisfaction with life) in depressed individuals.

As Hill et al. (1991) predicted, depressed participants learned the new encoding rule, "correctly" perceiving the height of the nostrils in the face diagrams in terms of life satisfaction. This pattern was especially observed for the "unsatisfied personality records." Also as predicted, the influence of the newly-learned encoding rule on participants' judgments increased over time. Their ratings during the second half of the testing phase (i.e., the last 40 trials) were more consistent with the covariation acquired in the learning phase than the ratings during the first half. In addition, participants could not articulate consciously what the covariation was despite their accurate performance.

In summary, negative encoding rules may self-perpetuate in depressed individuals, contributing to the development of unconscious negative perceptual biases.

Personality Characteristics as Predispositions to Depression

Recent research in depression underscores a growing convergence of opinion among theorists from different theoretical orientations regarding the association between dependent or achievement personality traits and depression (Arieti & Bemporad, 1980; Beck, 1983; Hammen, Ellicott, & Gitlin, 1989). According to Beck (1983), the dependent (also known as affiliative or sociotropic) type appears to be more sensitive to social rejection, while the achievement (also known as self-critical or autonomous) type seems to be more sensitive to failure scenarios. Persons with dependency concerns usually need others for safety, gratification, and support. In addition, they tend to fear social isolation, and they often seek reassurance from others (Beck, 1983). In comparison, persons with achievement concerns tend to have their own internalized standards for accomplishment, which are often higher than the conventionally accepted norms. Furthermore, such persons tend to judge their own worth by their ability to successfully fulfill specific expectations (Beck, 1983). The association between personality style and vulnerability to specific stressors is known as the congruency effect (Segal, Shaw, Vella, & Katz, 1992). According to this hypothesis, a high degree of dependency concerns increases the risk for a depressive reaction to a negative interpersonal event (e.g., conflict, rejection) but not to a negative achievement event (e.g., work or school problems). Additionally, a high degree of achievement concerns is proposed to present the opposite pattern of risk (Robins, Hayes, Block, Kramer, & Villena, 1995).

Studies of personality dimensions-event congruence have yielded mixed results. Some researchers have found support for the congruency hypothesis for both the dependent and achievement vulnerabilities (e.g., Hammen, Marks, Mayol, & deMayo, 1985; Segal et al., 1992). However, other studies have found evidence only for one of the hypothesized personality vulnerability factors. For example, Clark, Beck, and Brown (1992) found support only for dependency vulnerability, while Hammen et al. (1989) found evidence for the achievement vulnerability but for not the dependent one. Although a variety of samples have been used (e.g., clinical or nonclinical samples, cross-sectional or prospective design), Robins et al. (1995) claim that the differences in findings do not seem to be systematically related to these characteristics. Finally, although researchers have investigated the role of self-perpetuating encoding biases among depressed individuals, no such studies have additionally examined the congruency effect. The present study intends to examine vulnerability to specific stressors, which, in turn, is hypothesized to increase the risk of a depressive reaction.

<u>The Present Study</u>

In view of the above-mentioned considerations, the present experiment examines whether individuals with achievement and dependent personality characteristics differ in their ability to make judgments based on a newly acquired encoding rule. This experiment utilizes the stimulus materials (i.e., computerized brain diagrams) used by Lewicki et al. (1989), for purposes of partial replication. The study consists of a learning and a testing phase. During the learning phase, participants were exposed to a nonconsciously-salient covariation between an evaluatively neutral feature of the brain diagram (i.e., a particular ASCII character) and a particular situation with a negative endpoint (e.g., having very few friends or a low grade point average, GPA) or a positive endpoint (e.g., having many friends or high GPA). During the testing phase of the experiment, participants were exposed to additional brain diagrams with no covariation information and were asked to make judgments for the stimuli (i.e., to judge whether the brain diagram was indicative of someone with few or many friends, or someone with a low or high GPA).

Participants are expected to learn the encoding rule presented in the learning phase of the study. Based on the self-perpetuation hypothesis, their judgments during the testing phase are expected to become gradually more consistent with the covariation learned in the first phase. Specifically, participants are expected to "correctly" perceive the brain diagrams according to number of friends or GPA, and this effect is hypothesized to be more pronounced during the second half of the testing phase (i.e., the second segment of trials).

In addition, participants were classified into one of the four following personality styles: dependent, achievement (self-critical), dependent and achievement, or neither dependent nor achievement. The two types of situations chosen for this study, number of friends and GPA level, are presumed to represent interpersonal and achievement concerns, respectively. Based on the congruency hypothesis, an interaction effect is predicted between the four levels of personality subtypes and the situation to be rated (friends or GPA). That is, participants' judgments are expected to differ depending on the match between their personality subtype and the covariation condition involving interpersonal or achievement concerns. For example, the ratings of ambiguous material by a dependent individual (an individual more sensitive to social rejection) are predicted to be more consistent with the previously learned covariation when the encoding rule involves rating number of friends rather than GPA level.

These predictions would support a vulnerability model based on personality characteristics, which implies that negative encoding biases occur independently of mood (i.e., encoding biases precede depressed mood). An alternative model is that negative encoding biases do not precede depression, but are a consequence of depressive symptoms (i.e., a mood-dependent processing style). In order to test this alternative, state-dependent model, encoding biases were examined as a function of whether participants were depressed or nondepressed (irrespective of personality style). That is, only depressed participants would be expected to exhibit negative encoding biases, independent of achievement or interpersonal concerns. Specifically, depressed individuals are predicted to be more accurate in their ratings when covariations involve negative content (very few friends, low GPA), while nondepressed individuals are expected to be more accurate in their ratings when the covariations involve positive content (many friends, high GPA).

Given that Beck (1976) proposed that faulty information processing observed in depressed individuals is automatic (i.e., occurs nonconsciously), a strong test of his theory involves the examination of encoding biases at a nonconscious level. Such a test is attempted in this study. However, because the nonconscious effects found by Lewicki et al. (1989) were small (although statistically significant), it was questionable whether the present study would replicate their results. Thus, a weaker test of Beck's theory and the congruency effect would examine participants' conscious processing of the covariation information. That is, in addition to examining nonconscious information processing, participants' conscious recognition of covariations are also examined. Based on the congruency hypothesis, it is predicted that dependent participants would be more likely to recognize consciously covariations involving number of friends, whereas achievement-oriented participants would be more likely to recognize consciously covariations involving GPA. Furthermore, to the extent that information-processing is state-dependent (i.e., during depression) and not a function of personality vulnerability, it is predicted that depressed individuals would be more likely to recognize consciously covariations involving negative content (few friends, low GPA). In contrast, nondepressed individuals are predicted to recognize consciously covariations involving positive content (many friends, high GPA).

CHAPTER 2

METHOD

Participants

One hundred and sixty-one undergraduate students from psychology classes at Loyola University of Chicago participated in the study. Fifteen participants were dropped from the final sample due to their errors in following the experimental procedure. For example, some participants inverted the rating scale (i.e., using the lower half of the scale for ratings that required numbers from the upper half of the scale), while others gave random ratings during the learning phase against specific instructions to use either the lower or upper halves of the rating scale depending on the type of brain diagram to be rated. Thus, the final sample consisted of 146 participants, 90 females and 56 males.

Measures

Participants were asked to complete the Dysfunctional Attitudes Scale, Form A (DAS-A), a widely used measure of beliefs underlying self-worth (Weissman & Beck, 1978; cited in Beck, Brown, Steer, & Weissman, 1991), in order to categorize individuals as having strong dependent or achievement vulnerabilities. The original DAS contains 100 self-report items. Abbreviated parallel 40-item forms, DAS-A and DAS-B, have been developed using factor analysis. Alternate-form reliability has been found to range between .79 and .92 (Nelson, Stern, & Cicchetti, 1992; Oliver & Baumgart, 1985). In order to evaluate the ability of the DAS-A to identify personality subtypes with hypothesized vulnerabilities to depression, Cane, Olinger, Gotlib, and Kuiper (1986) investigated the factor structure of the measure with respect to the achievement and socially-dependent subtypes. Using a sample of 664 university students, they found that two major factors, performance evaluation and approval by others, accounted for a large proportion of the variance (61%) in the DAS scores. As the authors noted, the events hypothesized to precipitate depression for the socially-dependent and self-critical subtypes (disruption of personal relationships and failure to meet personal goals and standards, respectively) are similar to these two factors (Cane et al., 1986). In addition, validation studies have found the test-retest reliability of the total DAS to range between .73 and .84, while internal consistency measures (i.e., coefficient alphas) have ranged from .89 to .96 (Nelson et al., 1992; Oliver & Baumgart, 1985; Weissman, 1979). Form A coefficient alphas have been found to range between .85 and .94 (Cane et al., 1986; Nelson et al., 1992; Oliver & Baumgart, 1985). Evidence for the discriminant validity of the measure has been shown in the test's ability to distinguish reliably between groups of depressed and clinical control participants (Nelson et al., 1992).

Two additional measures, the Achievement Beliefs Scale (ABS) and the Dependency Beliefs Scale (DBS), were used to determine participants' achievement and dependency beliefs (Persons, Burns, Perloff, & Miranda, 1993). Thus, a dual criterion, based on the DAS, DBS, and ABS measures was used to classify participants' personality subtypes. Regarding the validity of the ABS and DBS, Persons et al. (1993) examined the relationship between these scales and the Personality Style Inventory (PSI) developed by Robins, Ladd, Welkowitz, Blaney, Diaz, and Kutcher (1992; cited in Persons et al., 1993). They found the DBS to be significantly correlated (r = .61, p < .01) with the PSI Sociotropy scale and nonsignificantly correlated (r = .25, ns) with the PSI Autonomy scale. In addition, they found the ABS to be correlated with the PSI Autonomy scale (r = .57, p < .01). However, the ABS was also correlated with the Sociotropy scale of the PSI. Persons et al. (1993) pointed out, as a possible explanation for this occurrence, that the Sociotropy and Autonomy scales of the PSI overlap considerably (r = .62), while the overlap between the Achievement Beliefs Scale and the Dependency Belief Scale has been found to range between r= .20 and r = .34. In the present study, measures were completed after the experimental task to prevent priming effects.

In order to classify individuals as depressed or nondepressed, participants completed the Beck Depression Inventory (BDI; Beck, 1967) following the experimental task. This measure was selected because it has shown acceptable levels of reliability and validity. Test-retest reliability for the BDI has been found to range in the .70s (Steer, Beck, & Garrison, 1986). A meta-analysis performed by Beck, Steer, and Garbin (1988) found the internal consistency of the measure to range between .81 and .86. In addition, the construct and concurrent validities appear to be high (Beck et al., 1988). The mean correlations of the BDI with clinical ratings and the Hamilton Psychiatric Rating Scale for Depression (HRSD) were found to be .72 and .73, respectively, for psychiatric patients, and .60 and .74, respectively, with nonpsychiatric participants (Beck et al., 1988). In the present study, participants who scored 14 or above on the BDI were assigned to the depressed group (N = 24) and participants who scored less than 10 were classified as not depressed (N = 101), following Beck et al.'s (1988) criteria for classifying at least moderate depression.

Design

In order to investigate the self-perpetuation hypothesis and the congruency effect, the study consisted of a 4 x 2 x 2 x 2 x 2 factorial design: 4 levels of personality subtypes (achievement, dependent, achievement and dependent, and neither achievement nor dependent); 2 situations related to achievement or dependency (GPA and number of friends, respectively); 2 segments of trials during the testing phase (trials 1-40 and trials 41-80); 2 directions of covariation (between the neutral feature of the stimulus and the situation; to be described below); 2 types of ratings (to be described below). Because participants were randomly assigned to conditions combining type of situation ratings and direction of covariation, equal numbers (at least 10) of participants within each personality subtype were expected in each cell of the factorial combination.

Procedure and Materials

As previously stated, the present study employed some aspects of the stimulus material chosen by Lewicki et al. (1989) for the purpose of partial replication. However, given the nonsignificant results of our pilot study on a sample of 160 participants using the parameters that Lewicki and colleagues previously employed, some modifications were made (to be explained below).

Participants were instructed that the study was concerned with how people form intuitive impressions of digitized brain diagrams (see learning phase instructions in Appendix A). The brain diagrams were computer-generated, high-resolution graphics presented on a computer screen. These were made up of eight types of ASCII characters (see

Appendix B). The percentages of the different characters making up the diagrams varied as follows: The character chosen as the "critical" one (ASCII code 178) was manipulated according to two specific percentage levels (17% or 4% of the brain scan), while the percentages of the remaining characters were allowed to vary randomly in order to complete each diagram. Thus, the two fixed percentages of the critical character constituted two types of brain diagrams. The percentages among the remaining characters, although allowed to vary randomly, were held within limits in order to preserve the general shape and appearance of the diagrams.

Lewicki et al. (1989) determined that the difference between the two types of brain scans was barely noticeable and not salient when these contained 17% and 13% of the critical character, respectively. That is, even when participants were specifically instructed to focus on the critical character, they had difficulty in correctly classifying the two types of brains. However, Lewicki et al. (1989) did report that participants <u>nonconsciously</u> were able to differentiate the brain scans. Nonconscious processing was determined by the participants' accurate performance in classifying the brain diagrams during the testing phase, while being unable to report the basis for their classification. Our pilot testing, however, yielded nonsignificant results using the 17 and 13 percentages.

That is, there was no evidence that participants could differentiate the brain scan containing 17% of the critical character from the brain scan containing 13% of the critical character at a conscious or a nonconscious level. Therefore, the difference between the two percentages was progressively increased during pilot testing until participants found it to be not consciously salient, but at least some participants were able to make correct judgments nonconsciously. This occurred when the two types of brain scans contained 17% and 4% of the critical character, respectively.

Each screen also included numbered x and y axes (numbers also randomly generated) along which each diagram was presented, providing additional (although meaningless) information as a distractor (see Appendix B).

The experiment consisted of a practice phase followed by a testing phase. Participants in each situation condition (GPA or number of friends) were exposed to 36 computerized brain diagrams during the learning phase. In the achievement situation, 18 brain diagrams were explicitly identified as "high grade point average (GPA)" and 18 as "low grade point average (GPA)." Similarly, participants in the dependent situation received 18 brain diagrams explicitly identified as [having] "very few friends" and 18 as [having] "many friends." Thus, all participants received information about brain diagrams involving the high endpoint (high GPA, many friends) and the low endpoint (low GPA, very few friends). This repeated measures variable will be identified henceforth as the direction of the rating (high, low).

Additional instructions were given to 61 of the 146 participants in order to provide more meaning regarding the situation for GPA or number of friends (see Appendix A). In order to compare participants who received additional instructions with those who received only the original instructions, t-test analyses were performed for both conscious and nonconscious awareness. Results indicate that participants did not differ on their ability to become consciously or nonconsciously aware of the covariation as a result of receiving the additional instructions.

Although the brain diagrams were generated randomly, the screens presented during the learning phase contained a systematic, nonconsciously-salient covariation between the percentage of the critical character (4% versus 17%) in the brain diagram and the explicitly identified situation involving GPA or friends. The situation information appeared on the upper-right corner of the screen. The covariation condition contained two levels. For half of the participants, the higher percentage of the critical character (i.e., 17%) was explicitly identified with the positive endpoint of the situation (high GPA or many friends), while the lower percentage (4%) was explicitly identified with the negative endpoint of the situation (low GPA or very few friends). The remaining participants were randomly assigned to the opposite covariations; the 4% brain diagrams were identified with the positive endpoint, and the 17% brain diagrams with the negative endpoint of the personality feature. Thus, the type of brain diagram (4% and 17%) was counterbalanced with the situation (positive and negative endpoints) in a between-subject design.

Each record was displayed for 11 s, following the protocol of Lewicki et al. (1989). During the practice phase, participants were instructed to look at the situation information (friends, GPA) and at the brain diagrams presented on the computer screen to "get an intuitive feel" for each person (see instructions in Appendix A). As in Lewicki et al. (1989), participants also were asked to rate each diagram using an 8-point scale (by pressing one of eight number keys on the computer keyboard). The scale was divided into 4-point halves and labeled "High GPA" and "Low GPA" (or "Many Friends"/"Very Few Friends") at its endpoints. Thus, ratings of 1-4 represented a person who has very few friends or a low GPA, and ratings of 5-8 represented a person who has many friends or a high GPA. A scale, rather than dichotomous ratings, was used to allow participants to express their degree of confidence in their judgments. As the type of brain diagram (4% or 17%) and the endpoints of the situation (low GPA/very few friends or high

GPA/many friends) were counterbalanced, 4% brains either required a low rating (i.e., between 1 and 4 for low GPA or very few friends) or a high rating (i.e., between 5 and 8 for high GPA or many friends) depending on the condition. Similarly, 17% brains either required a high or a low rating depending on the condition to which participants were randomly assigned.

Even though during the practice phase participants were told whether the brain diagram characterizes a person with high GPA (many friends) or low GPA (very few friends), they were still asked to provide ratings. Participants were told that the purpose for making the ratings during the practice phase was to familiarize themselves with the rating scale and with the task in general. They received no feedback concerning the accuracy of their ratings.

During the testing phase of the experiment, participants were exposed to 80 additional brain diagrams (40 with 4% of the critical character and 40 with 17% of the critical character); however, these diagrams were not identified with regard to the level of the particular situation (e.g., "high GPA" or "low GPA"). Participants were asked to use their "intuition" to interpret the diagrams and to rate them using the same 8-point scale as described above. Participants also were asked to respond quickly, following their "first intuitive thought," and they received no feedback concerning the accuracy of their ratings. The ratings and response latencies[1] were recorded by the computer.

After the experiment, participants completed a post-experimental questionnaire regarding their observations and reflections pertaining to the stimulus material and the strategies used (if any) to make the ratings during the testing phase (see Appendix A for the questions used). Following the post-experimental questions, respondents filled out the BDI, DAS, ABS, and DBS questionnaires. Finally, participants were debriefed and allowed to ask questions about the experiment.

---

[1]Lewicki et al. (1989) expected participants to respond faster during the second half of the testing phase. Indeed, they found this to be the case. However, they explained this finding as a possible effect of "unspecific training" (p. 328). The present study also found participants to respond significantly faster during the second half of the testing phase. A significant ($p < .0001$) main effect of segment (i.e., trials 1-40 vs. trials 41-80) was found for latencies for both achievement and dependent groups. Contrary to our findings, these investigators also found that participants responded faster when rating "intelligent" brains as opposed to "nonintelligent" brains. Whether this finding is due to a nonconscious differentiation of the two types of brains or due to a conscious response bias (in which favorable ratings are made more quickly) is not clear.

CHAPTER 3

RESULTS

Sample Characteristics

Personality subtypes. Table 1 displays descriptive statistics of the scores for the entire sample on the ABS, DBS, DAS (achievement and dependency subscales), and BDI questionnaires. The means for the measures are, overall, relatively low, indicating that the sample did not report a substantial number of depressive symptoms or personality characteristics associated with achievement and dependency concerns, as assessed by the measures used. Table 2 presents the correlations between the measures used. The results indicate that the achievement measures appear to be more highly correlated ($r = .718$) than the dependency measures ($r = .419$), indicating more convergent validity for the achievement measures than for the dependency measures. However, the results also highlight the intercorrelations among measures of dependency and achievement concerns. For example, the highest correlation between achievement and dependency measures was found between the ABS and the dependency subscale of the DAS ($r = .486$).

The present study was designed to examine four personality subtypes (i.e., dependent, achievement,

Table 1

Mean, Standard Deviation, and Median Scores for Entire Sample of Measures of Personality Characteristics and Depression

Measure	M	SD	Median
ABS	1.515	0.781	1.429
DBS	1.691	0.681	1.750
BDI	7.534	6.160	7.000
DAS-D	3.688	0.928	3.700
DAS-Ac	2.566	0.914	2.333

Note. N = 146. ABS = Achievement Beliefs Scale (average score; scale endpoints: 1 = "Disagree very much," 4 = "Agree very much"); DBS = Dependency Beliefs Scale (average score; scale endpoints: 1 = "Disagree very much," 4 = "Agree very much"); BDI = Beck Depression Inventory (total score; range = 0 to 63); DAS-D = Dysfunctional Attitudes Scale, Dependency subscale (average score; scale endpoints: 1 = "Totally disagree," 7 = "Totally agree"); DAS-Ac = Dysfunctional Attitudes Scale, Achievement subscale (average score; scale endpoints: 1 = "Totally disagree," 7 = "Totally agree").

Table 2

Correlation Matrix of Measures of Personality and Depression

Measure	ABS	DAS-Ac	DBS	DAS-D	BDI
ABS	1.000				
DAS-Ac	0.718	1.000			
DBS	0.341	0.383	1.000		
DAS-D	0.486	0.451	0.419	1.000	
BDI	0.353	0.436	0.370	0.439	1.000

Note. ABS = Achievement Beliefs Scale; DBS = Dependency Beliefs Scale; BDI = Beck Depression Inventory; DAS-D = Dysfunctional Attitudes Scale, Dependency subscale; DAS-Ac = Dysfunctional Attitudes Scale, Achievement subscale.

dependent and achievement, and neither dependent nor achievement). Participants with characteristics of both personality subtypes were expected to be equally accurate in response to judgments involving achievement or dependency situations, while participants not possessing characteristics of either personality subtype were not expected to show sensitivity to either covariation.

A dual criterion was used to classify participants as to the presence or absence of achievement and dependency characteristics. Participants' scores were required to fall above the median for both the ABS and DAS-Achievement measures in order to be classified as having achievement concerns. Similarly, participants' scores were required to fall above the median for both the DBS and DAS-Dependency measures in order to be categorized as having dependency concerns. Correspondingly, participants' scores were required to fall below the median on both achievement or both dependency measures in order to be assigned to the low achievement or low dependency groups, respectively. However, there were not enough participants per cell in each group to consider four separate personality subtypes as a result of the dual (more restrictive) criterion used (see Table 3 for sample sizes and Table 4 for descriptive statistics). Twenty-three participants were found to have low scores on both characteristics (achievement, dependency), while 11 participants were found to have high

Table 3

Sample Sizes for Personality Subtypes

	Achievement	
Dependency	Low	High
Low	23	7
High	3	11

Note. Subtypes classified according to dual criterion.

Table 4

Sample Size, Mean, Standard Deviation, and Median Scores of Measures of Personality and Depression by Personality Subgroup

Subgroup	n	M	SD	Median
Low Achievement/				
Low Dependency	23			
ABS		0.789	0.420	0.714
DBS		0.929	0.378	1.000
BDI		2.826	2.498	2.000
DAS-D		2.696	0.581	2.700
DAS-Ac		1.612	0.343	1.600
Low Achievement/				
High Dependency	3			
ABS		1.095	0.360	1.413
DBS		1.958	0.072	2.000
BDI		2.667	3.786	1.000
DAS-D		4.000	0.436	3.800
DAS-Ac		1.778	0.567	2.000
High Achievement/				
Low Dependency	7			
ABS		2.000	0.369	2.143
DBS		0.786	0.393	0.875
BDI		3.429	2.992	3.000
DAS-D		2.857	0.648	2.900
DAS-Ac		2.692	0.700	2.667

Table 4 (continued)

Subgroup	n	M	SD	Median
High Achievement/				
High Dependency	11			
ABS		2.247	0.737	2.143
DBS		2.227	0.457	2.125
BDI		6.000	2.236	7.000
DAS-D		4.573	0.454	4.800
DAS-Ac		3.673	0.941	3.200

Note. ABS = Achievement Beliefs Scale (average score; scale endpoints: 1 = "Disagree very much," 4 = "Agree very much"); DBS = Dependency Beliefs Scale (average score; scale endpoints: 1 = "Disagree very much," 4 = "Agree very much"); BDI = Beck Depression Inventory (total score; range = 0 to 63); DAS-D = Dysfunctional Attitudes Scale, Dependency subscale (average score; scale endpoints: 1 = "Totally disagree," 7 = "Totally agree"); DAS-Ac = Dysfunctional Attitudes Scale, Achievement subscale (average score; scale endpoints: 1 = "Totally disagree," 7 = "Totally agree").

scores on both characteristics. Regarding high dependency/low achievement and low dependency/high achievement subtypes, only 3 and 7 participants, respectively, were placed into each group.

Because of the inadequate cell sizes, the analyses conducted examined two subgroups (high, low) for each personality subtype (achievement, dependency): participants who scored high (or low) on achievement concerns (i.e., on both the ABS and the achievement subscale of the DAS) regardless of their scores on dependency concerns and participants who scored high (or low) on dependency measures (i.e., on both the DBS and the dependency subscale of the DAS) regardless of their scores on achievement subscales. Tables 5 and 6 present descriptive statistics for the achievement and dependent subgroups, respectively, included in the analyses. In order to test the vulnerability hypothesis, participants with BDI scores above 9 were excluded from the personality subgroups. Thus, we examined participants' ratings of the stimuli as a function of their personality vulnerability, independent of current depressed mood state.

Depressed and nondepressed groups. In order to test the state-dependent model, regardless of scores on achievement and dependency measures, participants who scored 14 or above on the BDI were assigned to the depressed group ($\underline{N}$ = 24) and individuals who scored less than 10 were

Table 5

Sample Characteristics (Mean, Standard Deviation, Median) of Achievement Subgroups Used in Statistical Analyses

Subgroup	M	SD	Median
ABS			
Low Achievement	0.839	0.395	0.857
High Achievement	2.182	0.556	2.143
DBS			
Low Achievement	1.354	0.616	1.250
High Achievement	1.728	0.727	1.875
BDI			
Low Achievement	3.542	2.775	3.000
High Achievement	5.034	2.809	5.000
DAS-D			
Low Achievement	3.148	0.767	3.150
High Achievement	3.745	0.870	3.800
DAS-Ac			
Low Achievement	1.739	0.368	1.733
High Achievement	3.308	0.764	3.067

Note. Low Achievement, N = 48; High Achievement, N = 29. ABS = Achievement Beliefs Scale (average score; scale endpoints: 1 = "Disagree very much," 4 = "Agree very much"); DBS = Dependency Beliefs Scale (average score; scale endpoints: 1 = "Disagree very much," 4 = "Agree very much"); BDI = Beck Depression Inventory (total score; range = 0 to 63); DAS-D = Dysfunctional Attitudes Scale, Dependency subscale (average score; scale endpoints: 1 = "Totally disagree," 7 = "Totally agree"); DAS-Ac = Dysfunctional Attitudes Scale, Achievement subscale (average score; scale endpoints: 1 = "Totally disagree," 7 = "Totally agree").

Table 6

Sample Characteristics (Mean, Standard Deviation, Median) of Dependent Subgroups Used in Statistical Analyses

Subgroup	M	SD	Median
ABS			
Low Dependency	1.034	0.651	1.000
High Dependency	1.857	0.694	1.714
DBS			
Low Dependency	0.882	0.401	1.000
High Dependency	2.250	0.448	2.063
BDI			
Low Dependency	3.324	2.825	3.000
High Dependency	5.682	2.901	7.000
DAS-D			
Low Dependency	2.685	0.598	2.700
High Dependency	4.368	0.474	4.350
DAS-Ac			
Low Dependency	1.978	0.729	1.800
High Dependency	2.921	1.077	2.867

Note. Low Dependency, N = 34; High Dependency, N = 22. ABS = Achievement Beliefs Scale (average score; scale endpoints: 1 = "Disagree very much," 4 = "Agree very much"); DBS = Dependency Beliefs Scale (average score; scale endpoints: 1 = "Disagree very much," 4 = "Agree very much"); BDI = Beck Depression Inventory (total score; range = 0 to 63); DAS-D = Dysfunctional Attitudes Scale, Dependency subscale (average score; scale endpoints: 1 = "Totally disagree," 7 = "Totally agree"); DAS-Ac = Dysfunctional Attitudes Scale, Achievement subscale (average score; scale endpoints: 1 = "Totally disagree," 7 = "Totally agree").

designated as not depressed (N = 101), following Beck et al.'s (1988) criteria for classifying at least moderate depression. Table 7 displays means, medians, and standard deviations for depressed and nondepressed participants' scores on the BDI, ABS, DBS, and DAS subscales.

Assessment of Conscious and Nonconscious Processing

Participants' conscious encoding was determined by their ability to report the nature of the covariation information they used to make ratings in the testing phase of the study. Thus, participants who became consciously aware of the covariation between the correct ASCII character and the situation presented with the brain diagrams during the learning phase were expected to explicitly identify, in the post-experimental questionnaire, the use of the critical character as part of their strategy for rating brain diagrams. Additionally, conscious awareness of the covariation would be demonstrated by a high degree of accuracy in participants' ratings during the testing phase.

Nonconscious encoding was measured by examining the accuracy of participants' ratings (i.e., ratings between 1 and 4 for brain diagrams reflecting few friends or low GPA, and ratings between 5 and 8 for brain diagrams reflecting many friends or high GPA) and the accuracy of participants' (conscious) answers on the post-experimental questionnaire. Thus, nonconscious encoding was presumed to take place when participants' ratings were accurate (or "correct" given the

Table 7

Mean, Standard Deviation, and Median Scores of Depressed and Nondepressed Groups

Group	n	M	SD	Median
Nondepressed	101			
ABS		1.338	0.744	1.286
DBS		1.556	0.697	1.625
BDI		4.208	2.971	4.000
DAS-D		3.420	0.849	3.400
DAS-Ac		2.344	0.859	2.200
Depressed	24			
ABS		2.024	0.737	2.143
DBS		2.057	0.454	2.125
BDI		18.250	4.316	17.500
DAS-D		4.325	0.813	4.350
DAS-Ac		3.278	0.837	3.233

Note. BDI total < 10 = Nondepressed; BDI total ≥ 14 = Depressed. ABS = Achievement Beliefs Scale (average score; scale endpoints: 1 = "Disagree very much," 4 = "Agree very much"); DBS = Dependency Beliefs Scale (average score; endpoints: 1 = "Disagree very much," 4 = "Agree very much"); BDI = Beck Depression Inventory (total score; range = 0 to 63); DAS-D = Dysfunctional Attitudes Scale, Dependency subscale (average score; scale endpoints: 1 = "Totally disagree," 7 = "Totally agree"); DAS-Ac = Dysfunctional Attitudes Scale, Achievement subscale (average score; scale endpoints: 1 = "Totally disagree," 7 = "Totally agree").

learned encoding rule) but participants were unable to articulate the nature of the covariation following the experimental procedure.

Following the data analysis procedures established by Lewicki et al. (1989), the rating scale was dichotomized (1-4 and 5-8) as "correct" or "incorrect" (depending on the covariation condition) when determining participants' "accuracy" in each segment, in order to control for intrasubject response bias (i.e., being more likely to assign high ratings than low ones). The dichotomized scale was used for the analyses that examined the accuracy of conscious and nonconscious processing, while the whole rating scale was used for the analyses that examined participants' ratings. Also following the procedures established by Lewicki et al. (1989), the 80 ratings presented to each participant during the testing phase were divided into two consecutive segments of 40 trials each. Based on the self-perpetuation hypothesis, participants' ratings were expected, on average, to be more consistent with the covariation during the second segment than on the first.

Analyses for Counterbalanced Variable: Type of Brain Diagram

As stated above, the type of brain diagram (4% and 17%) was counterbalanced with the high or low endpoints of the congruency situation in a between-subject design. Thus, brains with 4% of the critical character were paired with either the low endpoint of the situation (i.e., low GPA or very few friends), thus requiring a low rating between 1 and 4, or the high endpoint (i.e., high GPA or many friends), thus requiring a high rating between 5 and 8). Correspondingly, brains with 17% of the critical character were paired with either the high or the low endpoints of the congruency situation, also requiring high or low ratings, respectively.

In order to compare counterbalancing conditions, *t*-tests were performed. Therefore, conditions 1 (17% high GPA, 4% low GPA) and 2 (4% high GPA, 17% low GPA) were compared on several dependent variables (scores on ABS, DBS, BDI, DAS, ratings, response latencies, responses to the post-experimental questionnaire, and gender). Similarly, conditions 3 (17% many friends, 4% very few friends) and 4 (4% many friends, 17% very few friends) were compared on the same dependent variables. No systematic differences were expected. In fact, the groups were found not to differ across several dependent variables, suggesting that it was appropriate to collapse across the counterbalancing variables (i.e., covariation direction) for the remaining analyses. However, there were three comparisons that yielded statistically significant differences between groups. Participants in conditions 1 and 2 were found to differ on gender, $t(72) = 2.216$, $p < .05$ (i.e., more females than males in condition 2) and on one item from the post-experimental questionnaire dealing with a particular but noncritical ASCII character. Participants in condition 1 were more likely to indicate that they used the blank space to distinguish the brain diagrams than individuals in condition 2, $t(72) = 2.158$, $p < .05$. Regarding conditions 3 and 4, participants were only found to differ on their ratings for brain diagrams requiring high ratings (5-8) during the second segment of the testing phase. Namely, participants in condition 3 made higher ratings than the individuals in condition 4, $t(70) = -2.100$, $p < .05$. It is difficult to interpret why these results would occur, and these significant differences were not expected to impact the general interpretations of the results.

Analyses for the Congruency and Self-Perpetuation Hypotheses

Nonconscious processing using participants' ratings as the dependent variable. In order to test the congruency hypothesis, an interaction was expected between participants' personality subtype, the situation to be rated (GPA, friends), and the direction of rating (high, low). Thus, participants' accuracy of judgments for GPA or number of friends was expected to differ depending on the personality subtype. Based on the congruency hypothesis, it was expected that the judgments of individuals with achievement and dependent personality subtypes would be more consistent, or accurate, with the learned covariations when the ratings involved the GPA or the friends conditions, respectively. In addition, based on the self-perpetuation hypothesis, it was expected that participants' judgments during the testing phase would gradually become more consistent with the covariation "learned" in the first phase of the study (i.e., participants' ratings would be more accurate during the second segment of the testing phase).

Support for the congruency hypothesis would be observed in a three-way interaction involving personality subtype, situation to be rated, and direction of rating. Therefore, a 2 (personality subtype: high or low) x 2 (situation to be rated: GPA or friends) x 2 (direction of ratings: low or high) ANOVA was calculated for each personality group (achievement or dependent), with repeated measures on the last factor. The direction variable is repeated because all participants were exposed to brain diagrams with low GPA (very few friends) and a high GPA (many friends). Support for the self-perpetuation hypothesis would be obtained by a 2 x 2 interaction involving the direction of ratings (low, high) and the segment (first 40 trials, second 40 trials) variables. If the congruency effect requires many trials to develop (as in self-perpetuation of encoding biases), then a significant four-way interaction would be expected. Recall that participants who scored 10 or above on the BDI were excluded from the analyses. Thus, individuals in the personality groups were not depressed at the time of the study, but were classified according to the presence of a vulnerability to depression based on dependency or achievement concerns.

Regarding the self-perpetuation hypothesis, the results indicate that the direction of rating x segment interaction was not significant: $F(1, 100) = 1.673$, $p = .199$. Therefore, participants did not become more accurate in rating the brain diagrams during the second segment of the testing phase.

Results also indicate that no evidence was found for the congruency hypothesis. The 2 x 2 x 2 (Personality Subtype [High, Low] x Situation [GPA, Friends] x Direction of Rating [Low, High]) ANOVA for participants' ratings yielded a non-significant interaction for the dependent personality group: $F(1, 52) = 1.345$, $p = .252$. Similarly, when the achievement group was used for the analysis, no interaction was observed, $F(1, 73) = .010$, $p = .922$. However, participants did correctly rate "low GPA/very few friends" brains lower (i.e., brains diagrams received ratings less than 5) than "high GPA/many friends" brains (i.e., brains diagrams received ratings greater than 5). Thus, a main effect for type of rating was found $F(1, 52) = 24.308$, $p < .0001$ (when dependent subtypes were formed) and $F(1, 73) = 20.954$, $p < .0001$ (when achievement subtypes were formed). When dependent groups were formed, the mean rating for the brain diagrams with the positive endpoint (high GPA, many friends) was 5.314, and the mean rating for low-endpoint brain diagrams was 4.083. Similarly, when achievement groups were formed, the mean ratings for the diagrams with the positive and negative endpoints were 5.208 and 4.302, respectively. In sum, these results suggest that participants' ratings were accurate. The fact that participants' accuracy did not interact with either personality variable indicates that participants did not make correct ratings on the basis of personality subtype (i.e., high or low achievement/dependency). Furthermore, the situation that participants rated (GPA, friends) did not influence whether they correctly judged the brain diagrams.

In order to determine whether the congruency effect requires many trials to develop (as in self-perpetuation of encoding biases), the four-way interaction was calculated. The 2 x 2 x 2 x 2 (Personality Subtype [High, Low] x Situation [GPA, Friends] x Direction of Rating [Low, High] x Segment [First, Second]) ANOVA for participants' ratings yielded a non-significant interaction for the dependent personality group: $F(1, 52) = 0.823$, $p = .368$. Similarly, when the achievement group was used for the analysis, no interaction was observed, $F(1, 73) = 3.287$, $p = .074$. Thus, the findings did not provide evidence that the congruency effect may require many trials to develop.

Nonconscious processing using accuracy of participants' judgments as the dependent variable. Nonconscious encoding was presumed to take place when participants' ratings were accurate, given the learned encoding rule, but participants were unable to articulate the nature of the covariation (when answering the post-experimental questionnaire). Thus, the congruency hypothesis was also tested by classifying participants' judgments as "correct" or "incorrect" based on their mean ratings falling within the 1-4 or 5-8 range, as appropriate. For the dependent personality group, no evidence of nonconscious encoding was found as a function of personality subtype (high or low) and situation to be rated (GPA, friends), $\underline{X}^2(1, \underline{N} = 52) = .103$, $\underline{p} = .748$. Results for the congruency interaction were non-significant for the achievement group as well, $\underline{X}^2(1, \underline{N} = 73) = .527$, $\underline{p} = .468$.

<u>Conscious processing as a function of personality vulnerability.</u> As explained above, conscious encoding was determined by participants' ability to report the nature of the covariation information they used to make ratings in the testing phase of the study. This information was expected to be reported on the post-experimental questionnaire. In addition, conscious awareness of the covariation would be demonstrated by a high degree of accuracy in participants' ratings during the testing phase. To test conscious processing, the dependent variable was classified according to "correct" and "incorrect" categories based on whether participants correctly identified the covariation.

Personality subtypes, as defined by the ABS, DBS, and DAS subscales did not appear to influence participants' ability to detect consciously the covariation between the percentage of the critical character and the situation (GPA, friends). The main effect of personality was not significant for the dependent group, $\underline{X}^2(1, \underline{N} = 42) = 2.10$, $\underline{p} = .147$. Similarly, a nonsignificant main effect of personality was found for the achievement group, $\underline{X}^2(1, \underline{N} = 59) = .038$, $\underline{p} = .846$. No overall effect of situation to be rated (GPA, friends) was found either, $\underline{X}^2(1, \underline{N} = 114) = .073$, $\underline{p} = .787$. Regarding the congruency hypothesis, no evidence of conscious encoding was found for the dependent personality group as a function of personality subtype (high or low) and situation to be rated (GPA or friends): $\underline{X}^2(1, \underline{N} = 42) = .718$, $\underline{p} = .397$. Similarly, no evidence of conscious encoding was found as a function of personality subtype and situation for the achievement personality group, $\underline{X}^2(1, \underline{N} = 59) = 1.039$, $\underline{p} = .308$.

State-Dependent Information Processing

Nonconscious processing using participants' ratings as the dependent variable. The preceding results indicate that the congruency hypothesis was not supported. Based on this hypothesis, it was predicted that nondepressed participants who were classified according to their vulnerability to depression based on achievement and dependent personality characteristics would learn the covariations for GPA and friends, respectively. However, no effect of these variables was observed for conscious or nonconscious processing of the covariation information.

An alternative hypothesis is that nonconscious and conscious encoding of covariation information is influenced by depressed mood state rather than vulnerability to depression. To test this hypothesis, participants were classified as depressed if they scored 14 or higher on the BDI (N = 24) and nondepressed if they scored 9 or below (N = 101).

In support of a state-dependent processing model, level of depression (high, low) and direction of rating (1-4, 5-8) were expected to influence participants' ratings. Low ratings (between 1 and 4) were always paired with the negative endpoint of the situation to be rated (very few friends, low GPA). Similarly, high ratings (between 5 and 8) were always paired with the positive endpoint of the situation to be rated (many friends, high GPA). Therefore, to the extent that information-processing is state-dependent (i.e., during depression) and not a function of personality vulnerability, it was predicted that depressed individuals would be more accurate in their ratings when ratings involved negative content, while nondepressed individuals were expected to be more accurate in their ratings when ratings involved positive content. The main effect for level of depression was found to be nonsignificant, $F(1, 123) = .168$, $p = .683$. However, the main effect for direction of rating yielded a significant result, $F(1, 123)$

= 7.161, $p < .01$. The findings indicate that participants were accurate in assigning high or low ratings to brain diagrams as appropriate, but the level of depression had no overall effect on the accuracy of participants' performance.

There was, however, a significant interaction between level of depression and direction of rating, $F(1, 123) = 6.842$, $p = .01$. Contrary to the state-dependent prediction, depressed individuals did not differentiate nonconsciously between the two types of brain diagrams. Their ratings indicate that they were inaccurate, as they rated each type of brain equivalently ($M = 4.77$ for positive endpoint diagrams and $M = 4.76$ for negative endpoint diagrams). In contrast, nondepressed individuals accurately rated the two types of brain diagrams ($M = 5.18$ for positive endpoint diagrams and $M = 4.27$ for negative endpoint diagrams). Thus, it appears that only nondepressed participants were able to identify the covariation in the brain diagrams at a nonconscious level.

If self-perpetuation of the encoding rule develops over trials, then the segment variable should enter into a significant interaction with level of depression and direction of the ratings. Thus, a 2 (level of depression: high, low) x 2 (direction of ratings: 1-4, 5-8) x 2 (segment: first, second) ANOVA was calculated with repeated measures on the last two factors. Results indicate that the interaction was not significant: $F(1, 123) = 1.417$, $p =$

.236. Overall, these findings provide no evidence for the hypothesis that negative encoding biases may be a consequence of depressive symptoms (state-dependent model) or for the hypothesis that these biases may develop over time.

Nonconscious processing using accuracy of participants' judgments as dependent variable. Nonconscious processing in the depressed and nondepressed groups (regardless of personality subtype) was also examined by using a dichotomous classification of participants' ratings as correct or incorrect based on their mean ratings falling within the 1-4 or 5-8 range, as appropriate (39.4% of nondepressed participants were correct in their ratings, while 50% of depressed participants were correct in their ratings). As with the personality groups, nonconscious encoding was presumed to take place when participants' ratings were accurate, given the learned encoding rule, but participants were unable to articulate the nature of the covariation (in answering the post-experimental questionnaire). No evidence was found for nonconscious encoding as a function of level of depression, $X^2(1, N = 123) = .863$, $p = .353$.

Conscious processing as a function of level of depression. As described above, conscious encoding was determined by participants' ability to report the nature of the covariation information used to make ratings in the testing phase of the study. In addition, conscious awareness of the covariation would be demonstrated by a high degree of accuracy in participants' ratings during the testing phase. Once again, the dependent variable was classified according to "correct" and "incorrect" categories based on whether participants correctly identified the covariation or were incorrect in their identification (17.3% of nondepressed participants correctly identified the covariation, while 4.8% of the depressed participants were correct in their identification of the covariation).

Level of depression, as assessed by the BDI, did not appear to influence participants' ability to detect consciously the covariation between the percentage of the critical character and the situation (GPA, friends). No evidence of conscious encoding was found for the depression subgroups as a function of level of depression (high or low), $\underline{X}^2(1, \underline{N} = 102) = 2.085$, $\underline{p} = .149$.

CHAPTER 4

DISCUSSION

The purpose of the present study was to provide a possible explanation for the cognitive origins of negative encoding biases, including their relation to individuals' personality characteristics, and their dependence on, or independence from, depressed mood. However, the present study found no support for the development of encoding biases, either at a conscious or nonconscious level, as a function of vulnerability to stressors based on achievement and dependent personality characteristics. Furthermore, the present study found no evidence for the development of encoding biases, either consciously or nonconsciously, as a function of depressed mood state.

An additional purpose consisted of partially replicating Lewicki et al.'s (1989) findings on the self-perpetuating development of encoding biases. These findings were not replicated in the present study. Nondepressed participants did, however, make correct judgments at a nonconscious level regarding the covariations across all trials. Thus, in the present study, these participants seemed to accurately rate the brain diagrams throughout the entire testing phase, and did not require trials for the encoding bias to develop over time. A possible explanation for the lack of evidence regarding self-perpetuation is that the difference between the percentages of the critical character used in the present study (17% and 4%) may have been more salient to participants than the difference between 17% and 13% used by Lewicki et al. (1989). Thus, the encoding bias in the present study may not have required trials to develop over time.

Some problematic methodological and conceptual issues may have influenced the results. In broad terms, they relate to problems with the present study and problems with encoding studies in general. Four main issues will be addressed in the following discussion. First, the measures used in the present study to classify participants as having dependency or achievement concerns may not have accurately captured distinct characteristics of the personality subtypes. Second, the manipulation in the present study involving GPA and number of friends may not have adequately primed the personality vulnerability. Third, some aspects of Lewicki et al.'s (1989) findings may be questionable, in particular, the accuracy of participants' ratings and the clinical significance of the study's findings. Last, not only may encoding effects be difficult to achieve but the congruency effect may also be found at a different step in the processing of information.

Construct Validity of the Measures

The personality measures used in the present study may not have validly assessed dependency and achievement concerns. Furthermore, the two subtypes may not be distinct and mutually exclusive personality characteristics (Coyne & Whiffen, 1995). Regarding the divergent validity of the measures, the dependency and achievement subscales of the DAS, for example, were found to be considerably correlated (r = .541). That dependency and achievement concerns are related is promoted by Coyne and Whiffen (1995), who review findings that consider the possibility of autonomy (i.e., achievement) and dependency concerns as potential dimensions of personality occurring within the same individual, rather than as independent traits. Thus, it may be inappropriate to differentiate dependent and achievement types, and instead, researchers should determine individuals' relative position on these dimensions. Due to small cell sizes, the present study was unable to compare participants according to their relative position on the dependency and achievement dimensions (i.e., high achievement/high dependency, high achievement/low dependency, low achievement/high dependency, low achievement/low dependency). Instead, the present study classified participants according to their scores (high or low) on the dependent (or achievement) characteristic, regardless of their score on the other personality dimension.

In terms of the criteria used for the classification of personality subtypes, the low convergent validity between the DBS and the dependency subscale of the DAS (r = .419) may have affected the utility of using a dual criterion. In addition, median splits were used to classify participants' scores into high or low groups. Coyne and Whiffen (1995) point out that the use of this technique creates an arbitrary cutpoint that does not change the continuous nature of the variable in question. They also point out that individuals who score above the cutpoint are typically treated as identical, regardless of the difference in their scores, while individuals who are close in scores but on opposite sides of the cutpoint are treated as different. Therefore, other classification techniques may be adopted by future studies to account for the continuous nature of the personality variables in question.

Stress and Activation of Vulnerability

Another problematic conceptual issue related to the personality measures used in the present study was highlighted by Coyne and Whiffen (1995). After reviewing the research on the congruency hypothesis, Coyne and Whiffen (1995) suggest that serious life stress and stable contextual factors may affect the validity of measures that intend to assess stable personality traits. They propose that measures of dependency and achievement concerns may reflect stable, trait-like characteristics, as well as the effect of stressful life circumstances and other situational factors present at the time of measurement (Coyne & Whiffen, 1995). Thus, future studies of personality vulnerability would benefit from the additional assessment of current life stress.

Regarding the activation of the vulnerability, the particular situations used in the present study (GPA, number of friends) may not have been stressful enough to prime the achievement and dependency personality subtypes. Thus, future studies may test the vulnerability hypothesis by manipulating a stressful event, such as an achievement or interpersonal failure, and then test the nonconscious or conscious processing that may contribute to the development of encoding biases.

Findings by Lewicki's Group

A possible problem related to the findings in the present study concerns previous research conducted in this area. Lewicki et al.'s (1989) findings, while statistically significant, may have little clinical significance. The differences found in accuracy of participants' ratings were small. The largest difference in ratings for "intelligent" and "nonintelligent" brain diagrams occurred during the second segment of trials. Specifically, Lewicki et al. (1989) found mean ratings to fall around 4.81 (for nonintelligent brain diagrams) and around 4.97 (for intelligent brains diagrams). Thus, given the small magnitude of the difference in mean ratings, these findings may be difficult to replicate.

It should also be noted that the average ratings reported by Lewicki et al. (1989) are below 5, even for brain diagrams that required correct ratings between 5 and 8 (i.e., those diagrams labelled as "intelligent"). This finding suggests that, contrary to Lewicki's et al.'s (1989) conclusions, participants did not learn the covariation between the intelligence condition and the critical character in the brain diagrams. The present study found that participants did learn the encoding rule presented in the learning phase; however, this learning appears to have occurred independently of personality characteristics. In terms of the depressed and nondepressed distinction, only nondepressed participants appeared to have learned the encoding rule.

Encoding Effects

Another possible explanation for the results found in the present study relates to general problems of encoding studies. Gotlib, McLachlan, and Katz (1988) suggest that the congruency effect may not be found at encoding, but at a different step in the processing of information. The present study hypothesized that, if the development of negative encoding biases depends on depressed mood state, participants would be more accurate in rating brain diagrams paired with negative situations (low GPA, very few friends) than diagrams paired with positive situations (high GPA, many friends). Gotlib et al. (1988) found that, contrary to predictions, depressed participants did not attend to negative stimuli more frequently than to positive or neutral stimuli. In attempting to explain the obtained results, Gotlib et al. (1988) suggested that negative biases may be found in later stages of processing (i.e., recall) rather than in earlier ones (i.e., attention). The same explanation may be applied to the findings in the present study.

Gotlib et al. (1988) offered an additional suggestion for their findings, explaining the results according to a model of attention referred to as "zoom lens" (Ericksen & Yeh, 1985; cited in Gotlib et al., 1988). This model states that attention can be thought of as a zoom camera. Assuming that attention is allocated along a dimension, attention may be deployed widely, at a cost in resolution, or narrowly, with high resolution. In applying this model to their data, Gotlib et al. (1988) suggest that depressed participants may have deployed attention widely at a cost in resolution, while nondepressed participants may have focused their attention more narrowly, with better resolution. Similarly, the zoom lens model may explain why nondepressed participants in the present study were able to learn the covariation while depressed participants, who may have attended to a wider range of stimuli, were not able to do so.

The results of the present study indicate that individuals with moderate depressed symptoms did not learn the covariation, while nondepressed individuals did appear to learn the covariation. It is also possible that the ability to learn covariation information from the environment may be a deficit in depression (i.e., depressed individuals may lose the ability to attend to, process, or remember information). Furthermore, this deficit may be due to cognitive or motivational factors. However, this question cannot be determined with the data in the present study.

In conclusion, the present study, while limited, attempted to contribute to the research examining the role of cognitive factors in depression, as well as the research investigating the association between personality characteristics and particular stressors. Contrary to the state-dependent model, depressed individuals were less likely to encode a covariation rule regarding particular events. Instead, depressed individuals were unable to learn the covariation in the stimuli, suggesting that, rather than possessing a nonconscious sensitivity to negative information, these individuals were insensitive to the subtle covariations in the stimuli. This apparent lack of sensitivity appears consistent with the wide lens/low resolution concept described by the zoom lens model.

APPENDIX A

INSTRUCTIONS TO PARTICIPANTS AND POST-EXPERIMENTAL QUESTIONNAIRE

Instructions to Practice Phase

(Instructions for the dependent situation were identical, except for the situation to be rated. Each participant was given a copy of the instructions. Once participants finished reading the instructions, the experimenter reviewed them orally.)

This study is concerned with how people form intuitive impressions of digitized brain diagrams. During this experiment you will be shown brain diagrams such as the one attached [a copy of the diagram presented in Appendix B will be provided]. The first part of the study is a practice phase, and thus, we would like to familiarize you with the task. A personality characteristic will appear on the upper right hand corner of the screen along with each diagram that is presented, indicating whether the diagram reflects a person who has a high grade-point average (GPA) or a person who has a low GPA.

Please look at the upper right hand corner of the screen first to see what kind of person is represented, and then look at the diagram. Examine the diagram and try to gain an intuitive feeling (a "gut feeling") for the person based on the personality characteristic and other information presented on the computer screen. The intuitive feelings you develop in this practice phase will be tested later. Because the computers are slow, it takes some time for the whole scan to appear on the screen. Some adjustments will occur on the brain diagrams (especially at the top) but these have nothing to do with the experiment.

In order to familiarize you with the rating scale, please use the number keys labeled on the computer key board (1 through 8) to indicate whether the brain diagram reflects a person who has a high or a low GPA. During these initial practice trials, you can be confident that when we tell you a person has a high GPA, you should give that person a rating of 5 through 8. A person with low GPA should receive a rating of 1 through 4.

1	2	3	4	5	6	7	8
Low GPA				High GPA			

IMPORTANT: Please be patient with the computer and wait for the next diagram to appear after you make a rating. You will see the phrase "**Press any key to continue**" after several brain diagrams have been presented. Please raise your hand at that point, before you proceed.

Assessment of Comprehension of Instructions

In order to make sure that everyone is using the instructions in the same way, we would like you to answer the following questions:

1. This study is about

   (a) Intuition
   (b) Telepathy
   (c) Dream analysis

2. The confidence scale has _______ points.

3. Please write in the characteristics that correspond to the endpoints of the scale.

1 2 3 4 5 6 7 8

______________ ______________

If you have any questions or if things are not clear, please ask the experimenter before you proceed.
Please raise your hand when you are done.
(Subjects will be instructed to begin the practice phase at this point.)

Instructions to Testing Phase

(To be given to participants at the end of the practice phase.)

Now you will see some additional brain diagrams. This time we won't be providing you with any personality information about the person. Based on the personality information previously presented, we now would like you to rely on your intuition to rate whether the person has a high GPA or a low GPA.

Please use the 8 keys labeled on the computer keyboard, which form an eight-point scale, to indicate whether the person has a high GPA or a low GPA. Your confidence in your intuition may vary. Ratings of 1 through 4 would reflect a person who has a low GPA, while ratings of 5 through 8 would reflect a person who has a high GPA.

1	2	3	4	5	6	7	8
Low GPA				High GPA			

You may not know why you are making a particular rating but that is how your intuitive feelings may work. Try to get a general feeling of whether the person has a high or low GPA by relying on your intuition (or "gut feeling"), and <u>respond quickly, following your first intuitive thought</u>.

<u>Additional Instructions on Personality Characteristics</u>

(GPA condition)

People who have a <u>**high GPA**</u>

-may be concerned with academic failure
-tend to expect above-average performance
-may avoid taking risks for fear of making mistakes
-may be reluctant to ask for help

People who have a <u>**low GPA**</u>

-may not set high standards for themselves
-often feel they can enjoy an activity regardless of the end result
-may not necessarily feel inferior if they display weakness
-generally are not upset when they make mistakes

(Friends condition)

People who have <u>**many friends**</u>

-may find it difficult to be alone
-are often good at avoiding any disagreements and conflicts with people
-tend to be concerned with what others think about them
-work hard to maintain relationships with people at all costs

People who have <u>**very few friends**</u>

-may feel that their own opinions of themselves are more important than others' opinions
-often feel that they don't get enough love or respect from others as they deserve
-may not necessarily rely on other people for support and

encouragement
-may prioritize their own needs and wants above those of others

Post-Experimental Questionnaire

(To be answered by participants at the end of the testing phase.)

Please spend a few minutes answering the following questions. We are interested in your observations and impressions about the task you just completed.

1) How did you go about making your ratings?

2) Which particular aspects of the brain diagrams did you pay attention to?

(The first two questions will be on a separate sheet to prevent participants from being influenced by the questions that follow.)

3) When you were making the ratings, did you consider any of the following as possibilities: (please circle YES or NO)

a)	YES	NO	the shape of the diagrams
b)	YES	NO	the size of the diagrams
c)	YES	NO	the x axis
d)	YES	NO	the y axis
e)	YES	NO	the shading
f)	YES	NO	the color of the screen
g)	YES	NO	a general/intuitive feeling

If so, please explain.

4) At any time, did you make your decision (your ratings) based on: (please circle YES or NO)

a)	YES	NO	the shape of the diagrams
b)	YES	NO	the size of the diagrams
c)	YES	NO	the x axis
d)	YES	NO	the y axis
e)	YES	NO	the shading
f)	YES	NO	the color of the screen

g) YES NO a general/intuitive feeling

If so, please explain.

5) The brain diagrams were made up of particular symbols. Did you pay attention to any of the symbols to make your ratings?

If so, circle which one(s) and explain how you used the symbol(s).

a) 

b) 

c) "blank space"

d) |

e) 

f) 

g) 

h) 

i) 

j) ·

6) When you were making your ratings, did you pay attention to the following areas of the brain diagrams:

a) the left side
b) the right side
c) the middle
d) the top
e) the bottom

If so, circle which one(s) and explain how you used the information.

7) Did you try any other strategies to make your ratings? If so, please explain.

8) Do you have any additional comments or observations about the brain diagrams or the procedure of the experiment?

APPENDIX B

SAMPLE OF COMPUTERIZED BRAIN DIAGRAM

Note. Arrow indicates critical ASCII character.

REFERENCES

Abramson, L., Metalsky, G. I., & Alloy, L. B. (1989). Hopelessness depression: A theory-based subtype of depression. Psychological Review, 96, 358-372.

Alloy, L. B., & Ahrens, A. H. (1987). Depression and pessimism for the future: Biased use of statistically relevant information in predictions for self versus others. Journal of Personality and Social Psychology, 52, 366-378.

Arieti, S., & Bemporad, J. (1980). The psychological organization of depression. American Journal of Psychiatry, 137, 1360-1365.

Beck, A. T. (1967). Depression: Clinical, experimental, and theoretical aspects. New York: Hoeber.

Beck , A. T. (1976). Cognitive therapy and the emotional disorders. New York: International University Press.

Beck, A. T. (1983). Cognitive therapy of depression: New perspectives. In P. J. Clayton & J. E. Barrett (Eds.), Treatment of depression: Old controversies and new treatments (pp. 265-290). New York: Raven Press.

Beck, A. T., Brown, G., Steer, R. A., & Weissman, A. N. (1991). Factor analysis of the Dysfunctional Attitude Scale in a clinical population. Psychological Assessment: A

Journal of Consulting and Clinical Psychology, 3, 478-483.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). Cognitive therapy of depression. New York: Guilford Press.

Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty five years of evaluation. Clinical Psychology Review, 8, 77-100.

Beck, A. T., & Weishaar, M. E. (1989). Cognitive therapy. In R. J. Corsini & D. Wedding (Eds.), Current psychotherapies (4th ed., 285-320). Itasca, IL: F. E. Peacock Publishers, Inc.

Cane, D. B., Olinger, L. J., Gotlib, I. H., & Kuiper, N. A. (1986). Factor structure of the Dysfunctional Attitude Scale in a student population. Journal of Clinical Psychology, 42(2), 307-309.

Clark, D. A., Beck, A. T., & Brown, G. K. (1992). Sociotropy, autonomy, and life event perceptions in dysphoric and nondysphoric individuals. Cognitive Therapy and Research, 16, 635-652.

Coyne, J. C., & Whiffen, V. E. (1995). Issues in personality as diathesis for depression: The case of sociotropy-dependency and autonomy-self-criticism. Psychological Bulletin, 118, 358-378.

Gotlib, I. H., & McCabe, S. B. (1992). An information-processing approach to the study of cognitive functioning in depression. In E. Walker, B. Cornblatt, & R. Dworkin (Eds.), Progress in experimental personality and psychopathology research (Vol. 15, pp. 131-161). New York: Springer.

Gotlib, I. H., McLachlan, A. L., & Katz, A. N. (1988). Biases in visual attention in depressed and nondepressed individuals. Cognition and Emotion, 2, 185-200.

Hammen, C., Ellicott, A., & Gitlin, M. (1989). Vulnerability to specific life events and prediction of course of disorder in unipolar depressed patients. Canadian Journal of Behavioral Science, 21, 377-388.

Hammen, C., Marks, T., Mayol, A., & deMayo, R. (1985). Depressive self-schemas, life stress, and vulnerability to depression. Journal of Abnormal Psychology, 94, 308-319.

Higgins, E. T., King, G. A., & Mavin, G. H. (1982). Individual construct accessibility and subjective impressions and recall. Journal of Personality and Social Psychology, 43, 35-47.

Hill, T., Lewicki, P., Czyzewska, M., & Boss, A. (1989). Self-perpetuating development of encoding biases in person perception. Journal of Personality and Social Psychology, 57, 373-387.

Hill, T., Lewicki, P., Czyzewska, M, & Schuller, G. (1990). The role of learned inferential encoding rules in the perception of faces. Journal of Experimental Social Psychology, 26, 350-371.

Hill, T., Lewicki, P., & Neubauer, R. M. (1991). The development of depressive encoding dispositions: A case of self-perpetuation of biases. Journal of Experimental Social Psychology, 27, 392-409.

Lewicki, P. (1986a). Nonconscious social information processing. New York: Academic Press.

Lewicki, P. (1986b). Processing information about covariations that cannot be articulated. Journal of Experimental Psychology: Learning, Memory, and Cognition, 12, 135-146.

Lewicki, P., Hill, T., & Bizot, E. (1988). Acquisition of procedural knowledge about a pattern of stimuli that cannot be articulated. Cognitive Psychology, 20, 24-37.

Lewicki, P., Hill, T., & Sasaki, I. (1989). Self-perpetuating development of encoding biases. Journal of Experimental Psychology: General, 118, 323-337.

Nelson, L. D., Stern, S. L., & Cicchetti, D. V. (1992). The Dysfunctional Attitude Scale: How well can it measure depressive thinking? Journal of Psychopathology and Behavioral Assessment, 14, 217-223.

Oliver, J. M., & Baumgart, E. P. (1985). The Dysfunctional Attitude Scale: Psychometric properties and relation to depression in an unselected adult population. Cognitive Therapy and Research, 9, 161-167.

Persons, J. B., Burns, D. D., Perloff, J. M., & Miranda, J. (1993). Relationships between symptoms of depression and anxiety and dysfunctional beliefs about achievement and attachment. Journal of Abnormal Psychology, 102(4), 518-524.

Posner, M. I., Goldsmith, R., & Welton, K. E. (1967). Perceived distance and the classification of distorted patterns. Journal of Experimental Psychology, 73, 28-38.

Riskind, J. H., Rholes, W. S., Brannon, A. M., & Burdick, C. A. (1987). Attributions and expectations: A confluence of vulnerabilities in mild depression in a college student population. Journal of Personality and Social Psychology, 53, 349-354.

Robins, C. J., Hayes, A. M., Block, P., Kramer, R. J., & Villena, M. (1995). Interpersonal and achievement concerns and the depressive vulnerability and symptom specificity hypotheses: A prospective study. Cognitive Therapy and Research, 19, 1-20.

Segal, Z. V., Shaw, B. F., Vella, D. D., & Katz, R. (1992). Cognitive and life stress predictors of relapse in remitted unipolar depressed patients: Test of the congruency hypothesis. Journal of Abnormal Psychology, 101, 26-36.

Steer, R. A., Beck, A. T., & Garrison, B. (1986). Applications of the Beck Depression Inventory. In N. Sartorious & T. Ban (Eds.), Assessment of depression (pp. 123-142). Baltimore, MD: University Park Press.

Weissman, A. N. (1979). The Dysfunctional Attitude Scale: A validation study. Dissertation Abstracts

International, 40, 1389B-1390B.

VITA

The author, Mariana Belvedere, was born on January 9, 1969 in Buenos Aires, Argentina. Ms. Belvedere attended Vanderbilt University in Nashville, Tennessee, receiving a Bachelor of Arts degree in Psychology in May, 1991. Following graduation, Ms. Belvedere spent two years assisting Judy Garber, Ph. D. at Vanderbilt University in her research on depression.

Ms. Belvedere entered the Clinical Psychology program at Loyola University of Chicago in August, 1993. Ms. Belvedere is currently participating in a clinical clerkship at the Ravenswood Community Mental Health Center in Chicago.

THESIS APPROVAL SHEET

The thesis submitted by Mariana C. Belvedere has been read and approved by the following committee:

Jeanne Zechmeister, Ph.D., Director
Associate Professor, Psychology
Loyola University Chicago

Thomas P. Petzel, Ph.D.
Professor, Psychology
Loyola University Chicago

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the committee with reference to content and form.

The thesis is, therefore, accepted in partial fulfillment of the requirements for the degree of Master of Arts.

April 4, 1996
Date

Jeanne S. Zechmeister
Director's Signature