

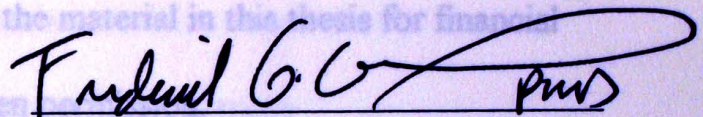
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FALSE MEMORY RECALL IN WOMEN WHO HAVE HIGH AND LOW
LEVELS OF EATING DISORDER SYMPTOMS


WENDY LORRAINE BAREFOOT

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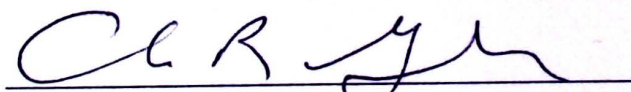
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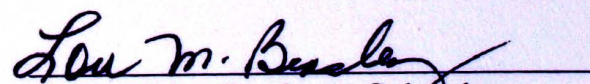
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FALSE MEMORY RECALL IN WOMEN WHO HAVE HIGH AND LOW
LEVELS OF EATING DISORDER SYMPTOMS.

A Thesis

Presented for the Master of Arts Degree

Austin Peay State University

Wendy Lorraine Barefoot

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ACKNOWLEDGEMENTS

There are several special people who have made my success here possible.

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ABSTRACT

Roediger and McDermott (1995) have found that participants often remember words not presented in word lists but are similar to the words in the word list. This study investigated whether or not women who had high levels of eating disorder symptoms recalled more words that are related to eating disorders than women who had lower levels of eating disorder symptoms. All participants were orally presented with 12 semantically related word lists. Out of the 12 word lists, six lists were food related and the other six were neutral lists. After each word list was read, participants filled out as many math problems as they could in 2 minutes. Following the math problems, each participant received another sheet of paper with seven words on it. The seven words consisted of three words that were from the list that was presented, three words that were not related and not presented, and the critical lure that was not on the list but was related to the words on the list. The participants were asked to write yes or no by the word if it was on the list. The participants were also asked to rate how confident they felt that the word was on the list (0-least confident, 10 most confident). The present study was analyzed by performing a series of t-test to determine if there was a difference between the two groups on word type. The results of the present study indicated that there was no significant difference between the two groups on word type, but there was a significant difference in confidence level between the two groups. In fact, the non-eating disorder group was more confident in both types of critical lures being on the list than the eating disorder group which is opposite of what was expected.

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CHAPTER I

INTRODUCTION

Eating disorders among women have become a focus in today's society.

Anorexia nervosa and bulimia nervosa have become more prevalent among young women and have received growing attention from various health disciplines and the public sector (Garner, Olmstead, & Polivy, 1983). The false memory syndrome is of great interest to many researchers. It has been found that participants tend to have a high level of false recall for semantically similar words. There has been research done on biased memory recall in individuals who have been diagnosed with eating disorders but not false memory recall.

Researchers (Overduin, Jansen, & Louwerse, 1995; Fairburn, Cooper, Cooper, McKenna, & Anastasiades, 1991; Ben-Tovim, & Walker, 1991; Cooper & Fairburn, 1993; Ben-Tovim, Walker, Fok & Yap, 1989) have used variations of the Stroop test in order to obtain biased memory in individuals with eating disorders; however, researchers have not used any variations of Deese's (1959) original memory paradigm to obtain false memory recall in individuals with eating disorders. It is hypothesized that women who have high levels of eating disorder symptoms will be more likely to falsely recall more non-presented critical words that are related to food words than women who have low levels of eating disorder symptoms. It is also hypothesized that there will be no differences in the two groups in regards to the recollection of neutral words.

Eating Disorders

Eating disorders have become more common among young college women (Striegel-Moore, Silberstein, Frensch, & Rodin, 1989). According to the American Psychiatric Association's, Diagnostic and Statistical Manual of Mental Disorders, (4th ed.; 1994), the symptoms of anorexia nervosa are: refusal to maintain a normal body weight for age and height, an intense fear of gaining weight or becoming fat, denial of the seriousness of the low body weight, and, for women, amenorrhea-missing at least three consecutive menstrual cycles. According to the DSM-IV (1994), the symptoms of bulimia nervosa are recurrent episodes of binge eating. Binge-eating can be described as eating a larger amount of food than would normally be eaten in a discrete period of time (e.g., within any 2-hour period), or an inability to control the amount of food eaten. Other diagnostic symptoms include recurrent inappropriate compensatory behaviors in order to not gain weight. Such behaviors include misuse of laxatives and diuretics, fasting, enemas, self-induced vomiting, excessive exercise, or excessive use of other over-the-counter medications that may prevent weight gain. These compensatory behaviors and binge eating have to occur at least twice a week for three months on average. The final symptom of bulimia nervosa is a reliance on body shape and weight for self-evaluation (DSM-IV, 1994).

Many studies have looked at eating behaviors and concerns in adolescent females. For example, Killen et al. (1996) conducted a 4-year prospective study on the influence of weight concern in the development of partial eating disorders among high school females. The participants were recruited from four high

schools in northern California. The total number of participants equaled 877 ninth graders. The average age was 14.9 years at baseline. The ethnicity of the group varied: Asian American, 23%; Caucasian American, 46%; Hispanic American, 14%; African American, 3%; Pacific Islander, 6%; Native American, 2%; and other, 6%. The factors assessed in the study were weight concerns, a variety of behavioral and psychological characteristics in patients with eating disorders, dietary restraint, temperament, height, body weight, body mass index, and frequency of drinking. While previous research relied on paper and pencil measures to assess symptomatology, Killen et al. added a structured clinical interview to determine the eating disorder symptoms. Graduate students in counseling and clinical psychology were trained to do these interviews. In order for the females in this study to be considered to be suffering from a partial syndrome eating disorder, they had to have more than just concern for body weight and shape. The young women had to have the following for three months before the day of the interview: binge eating episodes which consisted of large amounts of food consumed within a specified time period; behaviors that would prevent weight gain such as use of diuretics, vomiting, using laxatives, and excessive exercise at least 5 times in the previous 3 months; and they would also have to have a preoccupation and overconcern with body weight and shape, or feelings of not being able to control the amount of food consumed during a binge episode.

Of the 825 participants in this study, only 36 developed a partial syndrome eating disorder over the 4-year interval. Past research has suggested that

individuals who are diagnosed with partial syndrome eating disorder tend to progress into full syndrome disorders over time (Striegel-Moore et al., 1989). Results indicated that shape and weight concerns appeared to be better linked with eating disorders than measures of temperament. However, this study did not look at the possibility of temperament influencing eating disorders through shape and weight concerns (Killen et al., 1996).

Striegel-Moore et al. (1989) conducted a study to determine what variables may predict or influence eating behaviors in college students over the first year of college. They distributed questionnaires during course registration at a competitive northeastern university to entering freshman to establish a baseline measure of the variables. Their total sample consisted of 1040 students representing 74.5% of the freshman class. There were 450 females with a mean age of 17.68 years and 590 males with a mean age of 17.85 years. The demographics portion of the questionnaire indicated that the majority of the students were from minority ethnic groups. The minority group consisted of Asian Americans, Hispanic Americans, and/or African Americans. A follow-up questionnaire was distributed four weeks prior to final examinations to see if there was any change in the variables between the baseline survey and the follow-up survey. The number of participants dropped to 962, representing 70.5% of the freshman class who were registered. Of the 962 participants, 403 were female and 546 were male. All questionnaires were then matched for accuracy of data. There were only 342 males and 330 females who matched on both questionnaires for age, height, race, and eight-digit identification code.

The variables that were assessed in the questionnaires were body image, body weight, feelings associated with weight, perceived attractiveness, symptomology of disordered eating, perfectionism and ineffectiveness, perceived stress, and competitiveness. Based on the responses to the questionnaire, 17 of the females and 1 of the males met all of the requirements for bulimia nervosa at baseline. At the follow-up, 11 females still met all of the requirements for bulimia nervosa. Results of the baseline data indicated that females (64.5%) were more likely than males (19.4%) to report, "having been on a weight loss diet" before attending college ($\chi^2(1) = 219.16, p < .0001$). Women (43.4%) also had a greater history of binge eating than males (17.0%) ($\chi^2(1) = 87.9, p < .0001$). More females (12.2%) than males (2%) also indicated that they had purged in order to control their weight in the past ($\chi^2(1) = 43.50, p < .0001$). Other results indicated that it was more likely for women who were not dieting at the beginning of the year to report dieting at the end of the year than for women who had been dieting at the beginning of the year to have stopped dieting at the end of the year ($\chi^2(1) = 27.88, p < .001$). The same was reported for males ($\chi^2(1) = 39.86, p < .001$). It was also more likely for women to go from not binge eating to binge eating at the end of the year than from binge eating in the beginning of the year to not binge eating at the end of the year ($\chi^2(1) = 4.21, p < .05$).

Striegel-Moore et al. (1989) also looked at the factors that were associated with the worsening of disordered eating symptoms. They limited this to females only, because the males had a low incident rate of disordered eating. They established their groups by the scores on the Disordered Eating Symptoms Scale

(DESS) (Striegel-Moore et al., 1989). The three groups that were assigned were: “no change group”, “worsened group”, and the “symptom-free group.” It was found that the “no change group” and the “worsened group” had significantly higher DESS scores than the symptom-free group ($F(2,175) = 32.24, p < .0001$). However, the “no change group” and the “worsened group” did not differ significantly. They found a significant main effect of group (Wilks’ Lambda = 0.72, $F(2,135) = 2.49, p < .001$). The difference in the overall group was due to significant differences between the worsened group and the remaining groups.

In the studies presented above, eating disorders were mostly prevalent among adolescent and college-aged females. Eating disorders were also linked to the perceptions and concerns that are related to body shape and/or weight. Many of the females had also reported dieting at some point in their life. These studies help us to conclude that perceptions of ideal body shape and weight do play a factor in how people eat and diet. Such perceptions can lead many women to develop eating disorders.

False Memory Recall

In 1959, Deese conducted a study on false memory. In this study, word lists were presented to a group of participants in which the words in the lists were semantically related. Each word list consisted of one non-presented critical lure. Upon studying the word list, the participants were given a free recall test. In a typical task, participants were read a list of words and afterwards they were asked to recall as many words as they could remember from the word list or recognize similar non-presented words as having been on the list. The rate of intrusive

words in the free recall task ranged from 0 to 40% for strongly associated but non-presented words. It was found that participants often recalled or recognized words that were never presented to them.

The methods of the memory tasks have varied from study to study (Cooper & Fairburn, 1993; Deese, 1959; McDermott, 1996; Roediger, & McDermott, 1995; Seamon, Luo, & Gallo, 1998). According to Roediger and McDermott (1995), one reason that there is a high rate of false memory recall may be because the participants cluster the words that are presented to them into schemas. Therefore, all words that fit into the schema may be remembered as having been on the original word list. Roediger and McDermott included six of Deese's words lists, a recognition test composed of non-studied unrelated words, non-studied related words, studied words, and adopted the remember/know judgment task from Tulving (1985). In the remember/know judgment task, the participants had to decide if they remembered the word being presented in the word list and could recall the circumstances under which it had been presented or only knew that the word had existed in the word list without any specific recollection. Roediger and McDermott's (1995) first experiment looked at the rate of false recall in critical non-presented related lures compared to the rate of recall in studied words. The outcome of this study indicated that the participants recalled critical words that were never presented in the word lists at a hit rate (.84) similar to the hit rate for the studied words in the list (.86), $t(35) < 1$, $SEM = .036$, ns.

In the second part of the experiment, Roediger and McDermott (1995) looked at whether or not the participant could remember the circumstances under which he/she remembered the word. One group completed arithmetic problems after the word lists were read and before recall was allowed. The other group immediately recalled words after reading the word lists. The results of the second experiment indicated that participants recalled the critical non-represented lure 55% of the time as compared with 47% of the time for the studied words. The hit rate in the arithmetic group (.65), $t(29) = 5.20$, $p < .001$, was less than the hit rate in the recall group (.79). The probability that the non-presented critical lure would be recognized was found to be high (.93), and the majority of these words were said to be remembered (.73). The hit rate for words that were thought to be known (.20) was considerably lower.

Recently, researchers have examined whether the false memory effect can be eliminated by manipulating test and/or study conditions (McDermott, 1996). McDermott's research included multiple studies and recall tasks. McDermott's first experiment consisted of 45 Rice University undergraduates who received \$5.00 an hour for participating. In the experiment, the participants performed a free recall test 30 seconds after each word list was read and then completed another free recall test on all of the word lists two days after the beginning of the experiment. The results indicated that there were large levels of false recall in both conditions, but there was no significant difference between the two conditions (critical lures were recalled 44% of the time in the immediate condition and 46% of the time in the delayed condition) ($t(44) < 1$). It was also found that in

the final free recall data that there were more never presented critical items ($\underline{M} = .20$) recalled than studied items ($\underline{M} = .12$) $\underline{F}(1,44) = 21.28$, $\text{MSE} = .02$.

In a second experiment, McDermott (1996) used 40 Rice University undergraduates who received money or course credit for participation. McDermott presented words in either a blocked or random manner. In analyzing the data, McDermott used a factorial design employing order, test session, and item type as factors. Results still indicated false recall occurred, but the blocked presentation produced more false recall than the random presentation. One of the reasons for this finding could have been from participants trying to remember the items in the list. If the participants tried to organize or categorize the lists within a common theme then the critical non-presented item could have also been representative of the common theme. In addition, the blocking of words might tap into the relational processing of words and may be more likely to lure the participants into thinking that the critical word had been presented. Finally, the critical lure may have been an implicit associative response.

McDermott (1996) also conducted a (2 (ordering) X 5 (trial)) analysis of variance to determine the effects of trial number. The results indicated a significant main effect for trial number, $\underline{F}(4, 152) = 4.31$, $\text{MSE} = .05$, where false recall did diminish over the five trials given. The effect for study order approached, but did not reach the criterion for significance, $\underline{F}(1, 38) = 3.54$, $\text{MSE} = .38$, $p = .068$, suggesting that there is no significant difference in the order (blocked or random) in which the words were presented. Interaction effects did not reach significance $\underline{F}(4, 152) < 1$, indicating that both conditions (blocked and

random) produced the same amount of false recall at similar rates across trials. The results of these studies have indicated that false memory can be diminished but not eliminated. Roediger and McDermott (1995) reasoned that participants might consciously think of words that are related to the words on the word list that are presented and later think that the related word was actually a presented word on the word list. Underwood (1965) also suggested that the false recognition might take place during the encoding of a word. If participants see the word “cold”, they might think of a word that is opposite or associated, such as “hot.” If “hot” is presented later as a critical lure, participants might think it was originally in the list because of the implicit associative response that occurred earlier.

Seamon et al. (1998) examined the effect speed of presentation had on the false memory effect. Participants included 72 Wesleyan University undergraduates who received course credit for participation. Each participant was presented with eight lists of words in a blocked fashion on an Apple computer. There were 15 words on each list and they were presented in three different rate conditions. The words were presented at such a rapid rate (2 seconds, 250 milliseconds, or 20 milliseconds per word) that the recognition of the words on the list was reduced. The participants were to recall as many words as they could remember from the word list depending on the group that the participant was placed (either experimental with concurrent memory load task or control with no concurrent memory load task). In the concurrent study task group, the participants had to remember a seven-digit auditory sequence prior to the first word list given and then had to repeat the seven-digit sequence after the word list. The other

group only did memory recall after the word lists were presented. By reducing the presentation rate of the stimulus and giving a concurrent memory-load task, the hit rate for studied words became impaired. Results indicated that there were significant effects for exposure duration, $F(2, 66) = 25.80$, $MSE = 0.48$, $p < .001$; and memory load, $F(1, 66) = 7.13$, $MSE = 0.13$, $p < .01$; and a marginal interaction of these variables, $F(2, 66) = 2.94$, $MSE = 0.05$, $p < .07$. Results also suggested that the concurrent memory load task reduced the false alarms for related critical lures $F(1, 66) = 9.76$, $MSE = 0.27$, $p < .01$.

Another study done by O'Brien and Chin (1998), examined the incidental processing of constructive and aggressive conflict words when the child was exposed to poorly resolved, frequent, verbally and physically aggressive marital conflict. This study used 70 Latino children who were in the age range of 7 to 12 years. The participants were from two predominately Latino, low socioeconomic status, and inner-city neighborhoods in New York City. The participants passed other screening criteria, which consisted of the child's current parents living with the child for at least three years, the child was between the ages 7 and 12, the language that the parents used in arguments had to be either English or Spanish, and the participants had to be Latino. After all criteria were met, the participants consisted of 42 boys and 28 girls. There were 7 7-year-olds, 16 8-year-olds, 17 9-year-olds, 17 10-year-olds, 10 11-year-olds, and 3 12-year-olds. The majority of the participants, 95.7%, were bilingual.

This study was designed differently than the previous studies mentioned. After obtaining parental consent, the participants were individually administered a

set of questionnaires to determine the frequency with which the child was exposed to parental aggression. The participants responded to each question on the questionnaires as the questions were read to them aloud (O'Brien & Chin, 1998). After completion of the questionnaires, each participant listened to four audio taped simulations. These audio taped simulations contained about one minute of angry marital conflict. Each participant was instructed to imagine that he or she was overhearing these audio taped arguments between his or her own parents from his or her bedroom. Next, O'Brien, and Chin (1998) assessed the children's memory biases for constructive conflict words and aggressive words. The recognition memory task consisted of 28 constructive words (e.g., discuss, comfort) and 43 aggressive words (e.g., yell, scream, hit). Out of the constructive words that were represented, 20 of the 28 were "new" words in that they had not been presented previously in the study to the children and the remaining eight of the 28 were considered "old" constructive words. Of the aggressive words that were represented, 15 of the 43 were "old" aggressive words because they had been presented previously in the study and the remaining 28 of the 43 aggressive words were "new" because they had not been previously presented to the children. A false positive and false negative scale was then created from the word list. The false negative scale consisted of the number of old words that were incorrectly labeled as new words. The false positive scale consisted of the number of new words that children incorrectly labeled as old words. Thus, the false negative rate reflects the number of words that were old that children forgot and mistakenly labeled as new words. The false positive rate reflects the number of

words that were mistakenly remembered as having been used in the study but had not been used. These rates were then calculated separately for constructive and aggressive words, resulting in four scores: False positive rate for aggressive words; false positive rate for constructive words; false negative rate for aggressive words; and false negative rate for constructive words.

An ANOVA was performed with each of the four indexes of recognition memory. When analyzing the interaction effects, marital conflict group by word type (aggressive vs. constructive word) was found to be significant $F(1, 66) = 4.67, p = .03$. This suggests that the children who reported witnessing high levels of marital conflict show more biases in recognition memory for aggressive words than constructive words compared to the children who reported witnessing low levels of marital conflict. In addition, marital conflict group by error type was found to be significant $F(1, 66) = 5.67, p = .02$. The children who reported high levels of marital conflict were better at differentiating between the aggressive words from previous and the aggressive words that were new compared to the constructive words. Marital conflict group by age by error type was found to be significant $F(1, 66) = 6.58, p = .01$. Older children who reported high levels of marital conflict were more consistent in the memory biases for aggressive conflictual words than for younger children. Other significant interaction effects were found for marital conflict group by word type by error type, $F(1, 66) = 4.47, p = .04$, and marital conflict group by age by word type by error type, $F(1, 66) = 6.37, p = .01$. Based on the results of this study, O'Brien and Chin (1998) concluded that biases exist in recognition memory for aggressive words when

interparental conflict representations are activated in older children who reported more aggressive, frequent, and poorly resolved conflict, compared to children who reported lower levels of marital conflict.

Memory Bias Related to Eating Disorders

Individuals with eating disorders or any other clinical disorder are thought to recall more words that are related to their disorder than individuals who have not been diagnosed with clinical disorders (Sebastian, Williamson, & Blouin, 1996). Researchers have mainly used the Stroop task in identifying memory biases in patients with eating disorders, but some have used memory paradigms similar to the one mentioned. In the Stroop task, there is a series of words in which the participant is to name the color in which the word is written. The latency in response time is measured. Researchers found that individuals who have clinical eating disorders take longer to name the color if the word is related to eating, shape, or weight (Ben-Tovim, Walker, Fok, & Yap, 1989; Fairburn, Cooper, Cooper, McKenna, & Anastasiades, 1991). It is also thought that if a reaction time is longer for target words, this may indicate that the meaning of the target word has possibly distracted the participant. This may indicate that there may be a distortion of information processing.

Sebastian et al. (1996) have experimented with research in the area of eating disorders. Sebastian et al. suggested that people who are diagnosed with bulimia nervosa or anorexia nervosa automatically turn their attention toward stimuli that are body-related. It is also thought that if the person were preoccupied

with body size, then the preoccupation would be associated with the person's attention directed at body-related stimuli.

King, Polivy, and Herman (1991) published the first study that examined memory biases for body-related information in persons with eating disorders. The participants for this study included 66 female volunteers from an introductory psychology class, who received course credit for participating, and 24 females from an urban hospital equaling 90 participants. There were 31 non-dieting participants and 35 restrained dieting participants, and both groups were underweight. The obese group consisted of 24 females who attended a clinic for weight control at an urban hospital. The age range was 32 to 63 years.

Participants completed a series of questionnaires and tasks in a certain order. One questionnaire consisted of a counterbalanced free-response measure of the accessibility of food and weight related constructs. The participants were then instructed to read a one-page vignette of the behavior and physical appearance of a target person. They were only allowed to read the essay once. Next, they were given a word completion task in which they were to complete as many word fragments as possible in a 5-minute time limit. Then the participants were asked to repeat the essay exactly as they remember it. After all of these tasks and questionnaires were complete, participants completed the Revised Restraint Scale.

A repeated measure 2 (restrained students vs. unrestrained students) X 2 (weight/food vs. other items) multivariate analysis of covariance (MANCOVA) was performed on all recall scores to determine the outcome. The percentage overweight/underweight was used as the covariate (King et al., 1991). The

interaction between Restraint and Item Type was found to be significant, $F(1, 64) = 5.63, p < .02$. The results also indicated that recall for weight/food items as well as weight/food and other items was higher for the restrained participants ($M = 2.36$ and $M = 2.19$ for weight/food and other items, respectively) than for the unrestrained participants ($M = 2.19$ and $M = 2.53$ for weight /food and other items, respectively), $p < .01$. It was also found that restraint and the frequency with which words that were related to weight and food were mentioned on the response tasks had a significant positive correlation, $r(64) = .27, p < .05$. They found that obese females, restrained eaters, and patients with eating disorders recalled more weight and food-related information on a free-recall task than appearance-related information. In analyzing the recall scores, a 2 (obese vs. anorexic) X 2 (weight/food vs. other items) repeated measures MANCOVA was used. The predicted main effect was found for Item Type, $F(1, 27) = 4.80, p < .04$, indicating that obese and anorexic patients' recall for weight/food items ($M = 2.20$) was significantly better than for other items ($M = 1.79$). There were a couple of limitations to this study. The first one was a small sample size of patients with eating disorders. The second limitation was due to judges having to determine if the participants were recalling information from the essay accurately, which may have had low inter-rater reliability (King et al., 1991).

Sebastian et al. (1996) conducted a study that examined memory bias for fat-related words in patients with eating disorders. To overcome the previous limitations in the King et al. (1991) study, the researchers included a larger sample of patients with eating disorders. They also included a different and more

objective method of measuring recalled stimuli. Sebastian et al. designed an experimental study that compared three groups, a non-symptomatic control group, a weight-preoccupied control group, and an eating disorders group on a free-recall memory task. By using these two control groups, they were able to control for clinical vs. non-clinical status and the degree to which the participants may have had a preoccupation with their body shape and size. The eating disorder group consisted of 30 women who were seeking treatment at two different eating disorder clinics. The other two groups consisted of 30 female undergraduates. The purpose of this study was to determine if there was a presence of a memory bias for fat-related words in the non-clinical participants who were concerned with body weight and patients who have been diagnosed with eating disorders. They were also interested in looking at whether or not weight preoccupation was important as a necessary condition for memory bias to take place.

The result of this study for fat-related words was significant, $F(4, 127) = 4.06, p < .004$. A significant interaction was found between group (non-symptomatic, weight preoccupied, and eating disorder) and word type (fat, nonfat, and neutral). This indicates that the groups differed in recall patterns as a function of word type. It was found that the significant differences, when looking at the nature of the interaction, were that the profile for the eating disorder group was different from the profiles of the two control groups $F(2, 84) = 7.36, p < .001$, and fat words versus neutral and nonfat words were significantly greater in number of responses for the eating disorder group than the two control groups $F(2, 84) = 4.52, p < .002$. From this outcome, it is thought that the memory bias may be due

to a variable that is directly related to the clinical condition itself rather than the preoccupation with weight because the eating disorder group and the weight preoccupied group all had the same amount of depression, neuroticism, and degree of weight preoccupation (Sebastian et al., 1996).

Overduin, Jansen, and Louwerse (1995) conducted a study using the Stroop color-naming task. Overduin et al. recruited 100 female university students to fill out a questionnaire on life-style. The life-style questionnaire included four key eating behavior items. Only 51 of the participants who scored at an extreme end of the questionnaire were used in the experiment. The participants thought that they were participating in a study on the influences of life-style. Each participant was to eat two sandwiches three hours prior to the experiment. The participants were randomly assigned to one of two groups: appetizer or no appetizer. Each participant did a preliminary trial on the Stroop Test for practice. After the preliminary trial, participants in the no appetizer group continued with the Stroop test while the appetizer group was instructed to eat the appetizer while concentrating on the appearance, smell, and taste of the food.

To determine the results, a 2 (restrained vs. unrestrained group) X 2 (appetizer vs. no appetizer condition) ANOVA was used. Findings concluded that there was a main effect for condition $F(1, 49) = 4.18; p < .05$, but none for group. In the no-appetizer condition, restrained participants showed a greater Stroop interference than the unrestrained participants $t(25) = 2.01, p < 0.03$. This study also concluded that the unrestrained participants in the appetizer condition had significantly greater Stroop interference than the unrestrained participants in the

no-appetizer group $t(23) = 2.44$; $p = .01$. The 2 (restrained vs. unrestrained group) X 2 (appetizer vs. no appetizer condition) ANOVA revealed a significant Group X Condition interaction $F(1, 49) = 4.58$; $p < .04$. The results of the Overduin et al. (1995) study indicate that although food-related stimuli may have attentional bias, such a bias does not reflect a specific psychopathology of clinical eating disorders. Other studies have also come to this same conclusion (Ben-Tovim & Walker, 1991; Cooper & Fairburn, 1993). There was no relationship found between the Stroop food interference and the amount of food intake in the restrained eating group. One reason for this outcome may have been that restrained eaters usually suppress their food intake. Another interesting finding in this study was that restrained participants' attentional bias toward body shaped words was not as large as that of unrestrained participants. Overduin et al. hypothesized that a reason that they did not get the same results as previous research may have been because of the methods used. They did not use the same methods to perform the Stroop task as used in previous research. Overduin et al. suggest that it may be possible for the differences between the card or blocked versions of the Stroop test to be measuring emotional rumination on body words rather than attentional bias.

The Present Study

While the Stroop task has been widely used to determine if there are memory biases in eating disordered patients, Deese's (1959) original memory paradigm has not been used. The present study will employ Deese's original memory paradigm along with Roediger and McDermott's (1995) modification to

examine false memory recall related to eating disorders. Some of the methodological limitations that have occurred in previous research have been with the number of participants, time span between word list and recall and whether or not there is a concurrent study task between word list and recall. The present study addresses these issues by using a large number of participants and having a study task between the presentation of the word list and recall. The specific hypotheses under study are: 1.) Women who have high levels of eating disorder symptoms are more likely to have a false memory recall for words that are related to eating than women who have low levels of eating disorder symptoms; 2.) There will be no differences in the two groups in regards to the recollection of neutral words.

CHAPTER II

METHOD

Participants

The participants for this study consisted of 86 women who were recruited from undergraduate psychology courses at Austin Peay State University. The age range of participants was 18 to 43 years with a mean age of 24.62 years and standard deviation of 6.11. The mean height was 64.16 and standard deviation of 5.44. The mean weight was 154.62 with a standard deviation of 35.47. The mean education level was 14.47 (sophomore level) with a standard deviation of 1.07. All participants used English as their native language.

Measures

Demographics. Participants filled out a demographic report to assess age, ethnicity, schooling, dieting status, height, and weight. See Appendix A.

Eating Disorder Symptoms. The instrument used to determine eating disorder symptomatology was the Eating Disorder Diagnostic Scale (EDDS); (Stice, Rizvi, & Telch, 2000). The EDDS is a brief self-report scale that is used to diagnose bulimia nervosa, anorexia nervosa, and binge-eating disorder. The EDDS is a 22-item self-report consisting of a combination of yes-no, Likert, write-in, and frequency responses. All of these questions assess the DSM-IV diagnostic symptoms for bulimia nervosa, anorexia nervosa, and binge-eating disorder. The test-retest reliability was .87 for the overall symptom composite. The internal consistency of the EDDS for the symptom composite was .91 in the

full sample and was assessed by calculating Cronbach's alpha for the items that are standardized that make up the score. The EDDS also showed criterion validity (.81 for bulimia nervosa, .93 for anorexia nervosa, and .74 for binge-eating disorder) and convergent validity (Stice et al., 2000). See Appendix B.

Memory Recall. The memory recall task consisted of 12 word lists (with 15 words each). These words were semantically related and associated to one non-presented critical word. In this experiment, seven of the word lists were taken from Roediger and McDermott. The other five word lists were established from running a pilot study to determine if the word lists were representative of the critical lure. All word lists were recorded on a tape recorder at one word per 1.5 seconds. See Appendix C. The response form included a word list with three words that were presented to the participants, three words that were not presented to the participants and are not related to the words that were presented, and the non-presented critical lure. See Appendix E.

Procedure

Each participant was asked to read and sign an informed consent document (See Appendix D) prior to the experiment. Upon signing the informed consent, each participant was given a numbered packet. Each packet included: a pencil, a paper with math problems, a demographic report, and an EDDS questionnaire. The math problem paper, demographic report and the EDDS was numbered for confidentiality. Each participant completed the demographic report and the EDDS. After each was completed, the participants listened to a pre-recorded audiotape of 12 word lists. After each word list was read for a total of 15

words, the participants were asked to complete math problems for two minutes. Following the math problems, participants were given the response form. The participants were asked to indicate whether each word was presented. Participants were also asked to rate the confidence with which they thought the word was on the list (0 = least confident, 10 = most confident). The same procedure was repeated for all of the 12 word lists. The participants were asked to put each sheet of paper into the packet. The examiner then collected all data in the same packet in which it was handed to the participant. The participants were debriefed and dismissed from the experiment.

CHAPTER III

RESULTS

Participants were divided into two groups (high and low levels of eating disorder symptoms) by performing a median split on the EDDS scores. A series of t-tests were performed on the number of critical lures and the confidence levels participants reported in those critical lures.

Table 1

Two-sample t test on the recognition of critical lures for food words and non-food words.

Group	<u>M(eat)</u>	<u>SD</u>	<u>M(non-eat)</u>	<u>SD</u>	<u>T-value</u>	<u>P-value</u>
Food	4.514	1.521	4.510	1.622	-0.010	0.992
Non-food	4.919	1.164	5.020	1.199	0.394	0.695

Table 2

Two-sample t test on the confidence levels for food words and non-food words.

Group	<u>M(eat)</u>	<u>SD</u>	<u>M(non-eat)</u>	<u>SD</u>	<u>T-value</u>	<u>P-value</u>
Food	54.405	5.294	55.208	4.561	0.750	0.455
Non-food	52.054	9.372	56.106	4.203	2.648	0.010

Table 3

Paired samples t test on the total number of food critical lures vs. non-food critical lures on 86 cases.

<u>M food</u>	<u>M non-food</u>	<u>M difference</u>	<u>SD difference</u>	<u>T-value</u>	<u>P-value</u>
4.512	4.977	-.0465	1.453	-2.969	0.004

As shown on Table 1, there was no significant difference between the two groups on the total amount of falsely recalled words that are related to eating. As also shown on Table 1, there was also no significant difference between the two groups regarding all critical lures (food related and non food related). As indicated in Table 2, there was a significant difference on confidence level for the food related critical lures between the groups. The individuals in the non-eating disorder group had more confidence in the food critical lures than the individuals in the eating disorder group. As shown on Table 2, there was also a significant difference on confidence level for the non-food related critical lures between the groups. The individuals in the non-eating disorder group had more confidence in the non-food critical lures than the eating disorder group. As shown on Table 3, there was a significant difference in the total of critical lure food related words and the critical lure non-food related words.

CHAPTER IV

DISCUSSION

The first hypothesis under study was that women who had high levels of eating disorder symptoms would be more likely to falsely recall more non-presented critical words that were related to food words than women who had low levels of eating disorder symptoms. The second hypothesis under study was that there would be no differences in the two groups in regards to the recollection of neutral words. The results of this study indicated that there was no significant difference between individuals with eating disorder symptoms and individuals without eating disorder symptoms on the recall of critical lures that are related to food and those not related to food. However, it was found that individuals without eating disorder symptoms were more likely to place confidence that the critical lure was on the list when it actually was not on the list for both food words and non-food words.

Other research related to eating disorders and memory found that, when using the Stroop task, individuals who have clinical eating disorders take longer to name the color if the word is related to eating, shape, or weight (Ben-Tovim, Walker, Fok, & Yap, 1989; Fairburn, Cooper, Cooper, McKenna, & Anastasiades, 1991). Researchers believe that the participant may be distracted by the target word, and therefore, the target word has a longer reaction time. It is also thought that the individual may have a distortion of information processing. The present study indicated that there may be a distortion of information processing but it may not be related to eating. In fact, the results indicated that food critical lures and

neutral critical lures were falsely recalled at about the same rate for both the eating disorder group and the non-eating disorder group. This suggests that both groups are possibly clustering the words that are on the list and therefore think that the critical lure was also on the list.

Overduin, Jansen, and Louwerse (1995) also conducted a study using the Stroop color-naming task. This study examined participants (restrained group and unrestrained group) who were randomly assigned to two different conditions (appetizer condition and no appetizer condition). The results concluded that there was stronger Stroop interference in the restrained participants in the no-appetizer condition than the unrestrained participants. Another finding was that the unrestrained participants in the appetizer condition had greater Stroop interference than the unrestrained participants in the no-appetizer condition. The results of this study indicate that food-related stimuli may have attentional bias, but the researchers do not believe that this bias reflects a specific psychopathology of clinical eating disorders. The present study does not support these findings in that the eating disorder group and the non-eating disorder group falsely recalled a similar amount of critical lures for neutral and food-related words suggesting that there is not an attentional bias between the two groups for food-related stimuli.

Sebastian et al. (1996) examined memory bias for fat-related words in patients with eating disorders. This study included three groups, a non-symptomatic control group, a weight-preoccupied control group, and an eating disorders group. They found a significant interaction between group and word type. They also found that the eating disorder group had a significantly greater

number of responses for the fat words than neutral and nonfat words compared to the two control groups. An explanation for these results could be that women who suffer from eating disorders may unconsciously be thinking about food or food related words in these studies. However, the present study does not come to the same conclusion. In fact, the findings were the opposite of what was expected. The results that we expected to find were that women with eating disorders would falsely recall more critical lures related to food than women without eating disorders. One reason for the present results may have been that our eating disorder group only had slight symptoms and may not have been individuals with true eating disorders. Another reason may be that the participants clustered the words on the list, so that when the critical lure was presented they automatically assumed that it was also on the list.

The present study does support other research in false memory. For example, Roediger & McDermott (1995) conducted a study that looked at the rate of false recall in critical non-presented related lures compared to the rate of recall in studied words. The results of their study concluded that the participants recognized critical words that were never presented in the word lists at a similar rate as the studied words in the list. The present study found the same results with both the eating disorder and non-eating disorder group for both types of words (food words and non-food words). The non-significant difference between the food and non-food critical lures could be due to the strength of the false memory paradigm in that the amount of recall for critical lures is similar to the amount of recall for words that were on the list.

Some of the limitations to this study are sample size. We only obtained 86 participants for this study. Another limitation was the amount of time it took to administer the research per session. Had it been a shorter time frame, there may have been more participants. The data was also gathered at a smaller university; therefore, our sample size may be under what would be needed to generalize the findings to other universities and to the general public. Another limitation to this study is that the eating disorder measurement is a self-report questionnaire. Self-reports are not as valid as other standardized tests.

This study can be improved upon by expanding the sample size to include at least 200 or more participants. The addition of males would also make this research more diverse in population. It would also be beneficial to expand this research to other universities or a major university to gather a more random sample of individuals. Another way to improve this study would be to shorten the time of administration. Using a different method to assess for eating disorders may also produce different results.

The results of this study indicated that there was no difference on the false recall of critical lures for food words and nonfood words between the two groups. The participants without eating disorder symptoms did have more confidence in all of the critical lures (food and non-food words) than the participants with eating disorder symptoms. These results are opposite of what we expected to find.

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APPENDICES

APPENDIX A
DEMOGRAPHIC REPORT

Appendix A
Demographic Report

Age	_____
Ethnicity	_____
Last school year completed	_____
Dieting Status (have you been on a diet in the last year)	_____
Height	_____
Weight	_____

APPENDIX B
EATING SCREEN

APPENDIX B

EATING SCREEN

Please carefully complete all questions.

Over the <u>past 3 months</u> ...	Not at all	Slightly	Moderately	Extremely		
1. Have you felt fat? 0	1	2	3	4	5	6
2. Have you had a definite fear that you might gain weight or become fat? 0	1	2	3	4	5	6
3. Has your weight influenced how you think about (judge) yourself as a person? 0	1	2	3	4	5	6
4. Has your shape influenced how you think about (judge) yourself as a person? 0	1	2	3	4	5	6

5. During the past 6 months have there been times when you felt you have eaten what other people would regard as an unusually large amount of food (e.g., a quart of ice cream) given the circumstances? YES NO

6. During the times when you ate an unusually large amount of food, did you experience a loss of control (feel you couldn't stop eating or control what or how much you were eating)? YES NO

7. How many DAYS per week on average over the past 6 MONTHS have you eaten an unusually large amount of food and experienced a loss of control? 0 1 2 3 4 5 6 7

8. How many TIMES per week on average over the past 3 MONTHS have you eaten an unusually large amount of food and experienced a loss of control? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

During these episodes of overeating and loss of control did you...

9. Eat much more rapidly than normal? YES NO

10. Eat until you felt uncomfortably full? YES NO

11. Eat large amounts of food when you didn't feel physically hungry? YES NO

12. Eat alone because you were embarrassed by how much you were eating? YES NO

13. Feel disgusted with yourself, depressed, or very guilty after overeating? YES NO

14. Feel very upset about your uncontrollable overeating or resulting weight gain? YES NO

15. How many times per week on average over the past 3 months have you made yourself vomit to prevent weight gain or counteract the effects of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

16. How many times per week on average over the past 3 months have you used laxatives or diuretics to prevent weight gain or counteract the effects of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

17. How many times per week on average over the past 3 months have you fasted (skipped at least 2 meals in a row) to prevent weight gain or counteract the effects of eating? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

18. How many times per week on average over the past 3 months have you engaged in excessive exercise specifically to counteract the effects of overeating episodes? 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

19. How much do you weigh? If uncertain, please give your best estimate. _____ lbs.

20. How tall are you? _____ ft. _____ in.

21. Over the past 3 months, how many menstrual periods have you missed? 0 1 2 3 n/a

22. Have you been taking birth control pills during the past 3 months? YES NO

APPENDIX C
TWELVE WORD LISTS

Appendix C

Twelve Word List

1.) Critical Lure

Chocolate

- 1.) Mousse
- 2.) Candy
- 3.) Chip
- 4.) Pie
- 5.) Cocoa
- 6.) Heart
- 7.) Bunny
- 8.) Dark

- 9.) Sweet
- 10.) Cake
- 11.) Pudding
- 12.) Kisses
- 13.) Hershey's
- 14.) M&M's
- 15.) S'mores

2.) Critical Lure

River

- 1.) Stream
- 2.) Flow
- 3.) Winding
- 4.) Run
- 5.) Barge
- 6.) Lake
- 7.) Brook
- 8.) Swim

- 9.) Mississippi
- 10.) Creek
- 11.) Fish
- 12.) Water
- 13.) Bridge
- 14.) Tide
- 15.) Boat

3.) Critical Lure

Thief

- 1.) Criminal
- 2.) Steal
- 3.) Bad
- 4.) Jail
- 5.) Bandit
- 6.) Gun
- 7.) Cop
- 8.) Robber

- 9.) Bank
- 10.) Crook
- 11.) Money
- 12.) Villain
- 13.) Crime
- 14.) Rob
- 15.) Burglar

4.) Critical Lure**Bread**

- | | |
|-----------|---------------|
| 1.) Toast | 9.) Wine |
| 2.) Crust | 10.) Jelly |
| 3.) Milk | 11.) Rye |
| 4.) Eat | 12.) Butter |
| 5.) Loaf | 13.) Slice |
| 6.) Dough | 14.) Flour |
| 7.) Jam | 15.) Sandwich |
| 8.) Food | |

5.) Critical Lure**Cookie**

- | | |
|-------------------|------------------|
| 1.) Peanut Butter | 9.) Ginger Snap |
| 2.) Girl Scout | 10.) Mrs. Fields |
| 3.) Bake | 11.) Oreo |
| 4.) Dough | 12.) Fortune |
| 5.) Sheet | 13.) Monster |
| 6.) Oatmeal | 14.) Keebler |
| 7.) Cutter | 15.) Jar |
| 8.) Sugar | |

6.) Critical Lure**Cold**

- | | |
|-------------|-------------|
| 1.) Frost | 9.) Shiver |
| 2.) Freeze | 10.) Heat |
| 3.) Frigid | 11.) Ice |
| 4.) Warm | 12.) Hot |
| 5.) Arctic | 13.) Air |
| 6.) Weather | 14.) Chilly |
| 7.) Wet | 15.) Winter |
| 8.) Snow | |

7.) Critical Lure**Ice Cream**

- | | |
|--------------------|-------------------|
| 1.) Hagen-Daz | 9.) Cold |
| 2.) Float | 10.) Malt |
| 3.) Neopolitan | 11.) Milkshake |
| 4.) Blizzard | 12.) Freeze |
| 5.) Sprinkles | 13.) Scoop |
| 6.) Vanilla | 14.) Banana Split |
| 7.) Strawberry | 15.) Cone |
| 8.) Baskin-Robbins | |

8.) **Critical Lure** **Salad**

- | | | | |
|-----|-----------|------|----------|
| 1.) | Lettuce | 9.) | Crouton |
| 2.) | Fork | 10.) | House |
| 3.) | Scallions | 11.) | Dressing |
| 4.) | Cucumbers | 12.) | Caesar |
| 5.) | Cheese | 13.) | Egg |
| 6.) | Chef | 14.) | Tossed |
| 7.) | Tomato | 15.) | Bowl |
| 8.) | Taco | | |

9.) **Critical Lure** **Milk**

- | | | | |
|-----|---------------|------|------------|
| 1.) | Liquid | 9.) | Baby |
| 2.) | Skim | 10.) | Sour cream |
| 3.) | Sour | 11.) | Cow |
| 4.) | Yogurt | 12.) | Cereal |
| 5.) | Drink | 13.) | Egg Nog |
| 6.) | White | 14.) | Whole |
| 7.) | Hot Chocolate | 15.) | Cheese |
| 8.) | Chocolate | | |

10.) **Critical Lure** **Rough**

- | | | | |
|-----|--------|------|-----------|
| 1.) | Gravel | 9.) | Boards |
| 2.) | Rugged | 10.) | Uneven |
| 3.) | Ready | 11.) | Sandpaper |
| 4.) | Road | 12.) | Smooth |
| 5.) | Ground | 13.) | Sand |
| 6.) | Riders | 14.) | Coarse |
| 7.) | Jagged | 15.) | Tough |
| 8.) | Bumpy | | |

11.) Critical Lure**Mountain**

- | | |
|--------------|--------------|
| 1.) Ski | 9.) Range |
| 2.) Bike | 10.) Glacier |
| 3.) Peak | 11.) Top |
| 4.) Climb | 12.) Hill |
| 5.) Steep | 13.) Climber |
| 6.) Goat | 14.) Plain |
| 7.) Molehill | 15.) Summit |
| 8.) Valley | |

12.) Critical lure**Foot**

- | | |
|------------|--------------|
| 1.) Mouth | 9.) Sock |
| 2.) Boot | 10.) Ankle |
| 3.) Yard | 11.) Sandals |
| 4.) Toe | 12.) Shoe |
| 5.) Smell | 13.) Inch |
| 6.) Arm | 14.) Walk |
| 7.) Soccer | 15.) Kick |
| 8.) Hand | |

APPENDIX D

INFORMED CONSENT STATEMENT

Appendix D

Informed Consent Statement

Please read the statements below. They describe your rights and responsibilities as a participant in this research study.

1. **I agree to participate in the present study being conducted by Wendy Aquino, who is under direct supervision of Dr. Rick Grieve. You may reach Dr. Rick Grieve @ 221-7235 or Wendy Aquino @ 221-7233.**
2. **I understand I will be asked to:**
 1. **Fill out a demographic report.**
 2. **Fill out an Eating Disorder Diagnostic Scale (EDDS).**
 3. **Listen to an audiotape of 12 different word lists.**
 4. **Figure out math problems.**
 5. **Fill out a response form following each of the 12 word lists .**
3. **I have been given an opportunity to ask questions about my participation.**
4. **I understand that I may terminate my participation at any time without penalty or prejudice and that I may have all data obtained from me destroyed. I also understand that I do not have to answer any questions that I do not wish to answer.**
5. **I realize that by signing this form, I am willingly consenting to participate in this study. I also acknowledge that I have been given a copy of this consent form to keep.**

 Signature

 Date

 Witness

 Date

APPENDIX E

TWELVE RESPONSE FORMS

Appendix E

Response form for Word List #1

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1. Cocoa	<hr/>	<hr/>
2. Fear	<hr/>	<hr/>
3. Skin	<hr/>	<hr/>
4. Kisses	<hr/>	<hr/>
5. Chocolate	<hr/>	<hr/>
6. Swivel	<hr/>	<hr/>
7. Pudding	<hr/>	<hr/>

Response form for Word List #2

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1. Creek	_____	_____
2. Open	_____	_____
3.) Pin	_____	_____
4.) Brook	_____	_____
5.) River	_____	_____
6.) Tide	_____	_____
7.) Pillow	_____	_____

Response form for Word List #3

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1.) Crook	_____	_____
2.) Crown	_____	_____
3.) Jump	_____	_____
4.) Thief	_____	_____
5.) Money	_____	_____
6.) Suit	_____	_____
7.) Crime	_____	_____

Response form for Word List #4

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1.) Sandwich	_____	_____
2.) Temper	_____	_____
3.) Wine	_____	_____
4.) Emotion	_____	_____
5.) Bread	_____	_____
6.) Jelly	_____	_____
7.) Happy	_____	_____

Response form for Word List #5

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1.) Breeze	_____	_____
2.) Oreo	_____	_____
3.) Cookie	_____	_____
4.) Curtain	_____	_____
5.) Jar	_____	_____
6.) Frame	_____	_____
7.) Oatmeal	_____	_____

Response form for Word List #6

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1.) Cold	_____	_____
2.) Shiver	_____	_____
3.) Cotton	_____	_____
4.) Turtle	_____	_____
5.) Wet	_____	_____
6.) Calm	_____	_____
7.) Warm	_____	_____

Response form for Word List #7

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1.) Hair	_____	_____
2.) Hail	_____	_____
3.) Blizzard	_____	_____
4.) Ice Cream	_____	_____
5.) Cone	_____	_____
6.) Art	_____	_____
7.) Malt	_____	_____

Response form for Word List #8

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1.) Crouton	_____	_____
2.) Chef	_____	_____
3.) Bitter	_____	_____
4.) Tart	_____	_____
5.) Salad	_____	_____
6.) House	_____	_____
7.) Juice	_____	_____

Response form for Word List #9

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1.) Milk	_____	_____
2.) Cheese	_____	_____
3.) Liquid	_____	_____
4.) Dress	_____	_____
5.) Dive	_____	_____
6.) Friend	_____	_____
7.) White	_____	_____

Response form for Word List #10

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1.) Sluggish	_____	_____
2.) Coarse	_____	_____
3.) Sand	_____	_____
4.) Speed	_____	_____
5.) Rough	_____	_____
6.) Boards	_____	_____
7.) Delay	_____	_____

Response form for Word List #11

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1.) Mountain	_____	_____
2.) Insect	_____	_____
3.) Summit	_____	_____
4.) Poison	_____	_____
5.) Crawl	_____	_____
6.) Peak	_____	_____
7.) Climber	_____	_____

Response form for Word List #12

Words	Y(yes);N(no)	Confidence (0-10) 10 = most confident, 0 = least confident
1.) Ankle	_____	_____
2.) Hurt	_____	_____
3.) Foot	_____	_____
4.) Soccer	_____	_____
5.) Prick	_____	_____
6.) Sock	_____	_____
7.) Cloth	_____	_____

VITA

Wendy Lorraine Barefoot was born in Dothan, Alabama on April 28, 1974. She attended elementary and middle schools in the Dothan area and graduated from Dothan High School in June 1992. The following September she entered George C. Wallace Jr. College where she finished her basic requirements and then transferred to Auburn University in Auburn, Alabama where she received the degree of Bachelor of Arts in Psychology in December 1996. In August of 1998, she entered Austin Peay State University in Clarksville, Tennessee and in August of 2002, received a Master of Arts degree in Clinical Psychology.