CHARACTERISTICS OF ALEXITHYMIA AND EATING
DISORDERS IN COLLEGE WOMEN

by

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CHAPTER I

INTRODUCTION

Three adult forms of eating disorders have been identified, described, and studied in the behavioral sciences: anorexia nervosa, bulimia nervosa, and obesity. Anorexia nervosa and bulimia nervosa are typically seen in young women, whereas obesity occurs throughout the lifespan for both men and women (Bray, 1987; Fairburn & Beglin, 1990). The symptoms and consequences of these three disorders are becoming increasingly familiar to researchers and clinicians.

Anorexia nervosa is characterized by (a) a refusal to maintain a minimal normal body weight for age and height, (b) intense fear of gaining weight or becoming fat, (c) disturbed body image, and (d) absence of at least three consecutive menstrual cycles (American Psychiatric Association, 1987). Bulimia nervosa, which has often mistakenly been considered a variant of anorexia nervosa, is characterized by (a) recurrent episodes of binge eating, (b) a feeling of lack of control over eating during eating binges, (c) self-induced vomiting or other extreme behaviors to prevent weight gain, (d) two or more binge eating episodes each week for at least three months, and (e) persistent overconcern with body shape and weight (American Psychiatric Association, 1987). Obesity is an "excessive storage of energy in the form of fat" that has adverse effects on health and longevity (Simopoulos,

1987, p. 4). A more detailed description and a historical account of each of these disorders can be found in Appendix A.

Theoretical literature in the area of eating disorders suggests that there is a relationship between eating pathology (i.e., anorexia nervosa, bulimia nervosa, and obesity) and affect. Several psychodynamic theories have offered explanations for the connection of affective disturbance and eating disorders. In one of the earliest theoretical accounts of anorexia nervosa, Bruch (1973) suggested that anorexic individuals have difficulty perceiving and labeling internal body sensations, including the body sensations associated with the experience of emotion. For obese individuals, food becomes a substitute for the love or emotional support that the mother was unable to give (Bruch, 1947, 1953). In addition, an object relations theory of bulimia suggests that a weakness in ego structure predisposes bulimic individuals to becoming overwhelmed by uncontrollable emotionality that is controlled by binge eating and purging (Swift & Letven, 1984). Thus, various psychodynamic theories suggest that there is a link between eating disorders and affect.

Several cognitive and behavioral theories of eating disorders also suggest that there is a relationship between eating pathology and affect. The "disinhibition hypothesis" of Herman and Polivy's (1980) cognitive restraint theory suggests that emotional factors (e.g., dysphoric or anxious mood) disinhibit restrained eaters causing them to eat large quantities of food. Anxiety reduction models of obesity and bulimia have also been advanced to explain

obesity and bulimia. Kaplan and Kaplan (1957) suggested that obese individuals learn that eating diminishes anxiety, so the act of eating is reinforced by anxiety reduction. Finally, Rosen and Leitenberg (1982, 1985) proposed an anxiety-reduction model for the maintenance of bulimia. Because bulimic individuals have excessive concern about body weight and shape, eating produces anxiety. Vomiting reduces that anxiety, so it is reinforcing. More detail about these and other theories of eating disorders can be found in Appendix B.

In general, psychodynamic theories of eating disorders have rarely been empirically tested, but one study found general support for developmental difficulties among bulimics (Farmer, 1991). The anxiety-reduction theories have been shown to be too narrow; emotions other than anxiety have been shown to precede eating (Ganley, 1989). Empirical support has been shown for the restraint theory; cognitions and emotions, especially dysphoric emotions, can disinhibit restrained eaters and lead to overeating (Baucom & Aiken, 1981; Frost, Goolkasian, Ely, & Blanchard, 1982; Herman & Mack, 1975; Polivy & Herman, 1976a; Ruderman, 1985). Thus, empirical evidence is mounting for theories of eating disorders that suggest that emotions may play a part in eating pathology.

In addition to the support for theories of eating disorders with an emotional component, there is a growing body of empirical literature suggesting that pathological eating behaviors are attempts to cope with mood disturbances (i.e., individuals gain

emotional control by misusing food). In the empirical literature on obesity, numerous studies suggest that obese individuals engage in episodic eating associated with negative emotions or stressful life events (e.g., Castelnuevo-Tedesco & Schiebel, 1975; Hudson & Williams, 1981). In addition, binge eating is highly prevalent in obese groups, and emotions may influence binge eating (Gormally, Black, Daston, & Rardin, 1982; Keefe, Wyshograd, Weinberger, & Agras, 1984; Loro & Orleans, 1981; Marcus, Wing, & Lamparski, 1985). Also, mood fluctuations were greater in individuals who were overweight or engaged in binge eating (Lingswiler, Crowther, & Stephens, 1987). Finally, overeating, binge eating, and impulsive eating did not occur when obese individuals were hungry; they occurred when these individuals were tired, bored, irritable, depressed, stressed, or nervous (Schlundt, Hill, Sbrocco, Pope-Cordle, & Kasser, 1990).

Unlike the studies on obesity, the empirical studies on bulimia have tended to examine emotions during the entire eating cycle rather than studying feelings immediately preceding an episode of binge eating (Abraham & Beumont, 1982; Cooper, Morrison, Bigman, Abramowitz, Levin, & Krener, 1988; Johnson & Larson, 1982; Schlundt, Johnson, & Jarrell, 1986). Across all studies, the mood before, during, and after the binge was generally negative (e.g., tense, anxious, irritable, helpless, angry, guilty), but individuals experienced relief (i.e., calmness and reductions in anxiety, depression, and anger) after the purge.

In contrast to the extensive literature examining the relationship between eating behaviors and emotions in bulimic and obese populations, the study of emotional experience is almost nonexistent for anorexic populations. One study, however, suggested that anorexic individuals reported more negative moods than controls and felt better when consuming food (Larson & Johnson, 1981). Together, the studies examining the relationship between eating behaviors and emotions suggest that emotions seem to influence eating in eating disordered individuals, and eating seems, in turn, to influence emotional experience. An extensive review of the literature examining the relationship between eating pathology and affect can be found in Appendix C.

In an attempt to further clarify the relationship between eating disorders and affect, researchers have begun to look at the relationship between various forms of eating pathology and alexithymia, a cognitive-affective disturbance. Alexithymia is characterized by (a) difficulty in identifying and describing feelings, (b) difficulty in distinguishing between feelings and the bodily sensations associated with emotional arousal, (c) restricted imaginative processes demonstrated by a paucity of dreams and fantasies, and (d) a cognitive style that is concrete and reality based (Taylor, Bagby, Ryan & Parker, 1990). A comprehensive description of the concept of alexithymia and its historical development can be found in Appendix D.

To date, few empirical studies have directly examined the relationship between the various eating disorders and alexithymia.

Those few studies that have examined the relationship between alexithymia and anorexia nervosa have yielded mixed findings. One of the first studies examined symbolic functioning, one facet of alexithymia, in 20 anorexic patients (Bourke, Taylor, & Crisp, 1985). Symbolic functioning is the capacity to fantasize or arrange imaginative stimuli into meaningful relationships. Thirty percent of anorexic patients exhibited impaired symbolic functioning as measured by the SAT9 (Cohen, Auld, Demers, & Catchlove, 1985). Further, 55% of this same group of anorexics exhibited impaired symbolic functioning after weight gain. In addition, the anorexic patients' difficulty in labeling feelings was shown by elevated scores on the Interoceptive Awareness subscale of the EDI, which measures an individual's confidence in recognizing and identifying internal bodily sensations (i.e., emotions, hunger, and satiety); these scores did not change with weight gain. There are several implications of these results. First, alexithymia cannot be attributed to the effects of starvation, because there was a tendency for symbolic function to further deteriorate and interoceptive awareness to remain the same with weight gain. Second, there was no correlation between the measures of interoceptive awareness and symbolic function suggesting that these are two distinct facets of alexithymia. Finally, the authors suggest that the reason for the deterioration in symbolic functioning with weight gain is that many anorexics' psychological state worsens when they are stressed by additional weight.

A second controlled study compared 35 anorexic patients with 35 neurotic patients on the MMPI alexithymia subscale and some Rorschach indices suggestive of alexithymia (Pierloot, Houben, & Acke, 1988). The anorexic group scored significantly higher than the control group on the MMPI alexithymia subscale, but only 8 of the 35 individuals reached the cut-off of 14. The cut-off of 14 on the MMPI alexithymia scale was established in a previous study to identify individuals who were alexithymic (Kleiger & Kinsman, 1980). In addition, there were no significant differences on the Rorschach indices of alexithymia. Finally, none of the alexithymia scores of the anorexic patients changed with weight gain and treatment. The authors concluded that the validity of the measures of alexithymia that were used for the study is questionable. These conclusions are consistent with reviews of the measures of alexithymia that were chosen (Taylor & Bagby, 1988; Taylor, Bagby, Ryan, & Parker, 1990).

Another controlled study examined 20 anorexic patients and 10 patients from somatic clinics (i.e., orthopedics, surgery, and gynecology) on speech sample and questionnaire measures of anxiety and aggression (Engel & Meier, 1988). The results suggested that pure restricting anorexic individuals demonstrate the reduced emotionality (i.e., less anxiety and aggressiveness) typical of alexithymic individuals, whereas more impulsive anorexic (i.e., nonrestricted) individuals did not show a pattern of emotionality consistent with alexithymia. The authors were not clear about the definition of nonrestricted anorexia.

Aono and Kumashiro (1983) examined visual evoked responses (i.e., a physiological measure of brain activity indicating emotional arousal or anxiety) and levels of anxiety on the Taylor Manifest Anxiety Scale for 14 eating disordered individuals at rest and during hyperventilation. The eating disordered individuals were subdivided into typical cases of anorexia nervosa (i.e., females experiencing lack of appetite and emaciation), atypical cases of anorexia nervosa (i.e., males experiencing lack of appetite and emaciation, and females who were overeating and obese following an anorexic period), and cases of bulimia (i.e., individuals who overate and were obese and who had never been emaciated). Results showed that typical anorexics showed less manifest anxiety, and their visual evoked responses did not increase during hyperventilation. These results suggest that typical anorexic individuals demonstrate a state similar to alexithymia. The other two groups, however, showed much manifest anxiety, and the amplitudes of their visual evoked responses increased during hyperventilation. There is some question about the conclusions that can be drawn for bulimic individuals, because this study did not mention whether their "bulimic" individuals had eating binges and used extreme measures such as vomiting in response to the binges. The group that was identified as bulimic may have actually been an obese group.

An extensive literature review failed to uncover any empirical studies specifically examining alexithymia or symbolic functioning in a well-defined group of bulimic individuals or individuals with

subclinical bulimic symptomatology. However, one article presented two case studies of bulimic adolescents with narcissistic features who were observed to have alexithymic characteristics (Davis & Marsh, 1986). These adolescents were unable to recognize and tolerate certain uncomfortable feelings. In addition, they disowned their uncomfortable feelings (e.g., anger) and suggested that the feelings that they disowned were being expressed by others. Thus, these observations suggest that bulimic symptomatology and alexithymia can be observed together, but the relationship between bulimic symptomatology and alexithymia still needs to be explored empirically.

Alexithymia and symbolic functioning have also been examined in obese populations. Morbidly and moderately obese groups were generally more alexithymic and had a higher degree of symbolic function inhibition than normal-weight controls (Legorreta, Bull, & Kiely, 1988). In this study, symbolic function was measured using the SAT9, and alexithymia was measured using both the Schalling-Sifneos Personality Scale (SSFS) and the Alexithymia-Provoked Response Questionnaire (APRQ). The results on the two measures of alexithymia were inconsistent; the SSFS found the morbidly obese group significantly more alexithymic than the moderately obese group, whereas the APRQ found equal degrees of alexithymia in both the moderately and the morbidly obese groups. These results call into question the validity of the two measures of alexithymia.

These studies suggest that the relationship between eating pathology and alexithymia is still unclear. The results of studies examining the relationship between alexithymia and anorexia are mixed and are based on various measures of alexithymia that are currently unvalidated. The relationship between bulimia and alexithymia is even more uncertain. Two empirical studies may have included bulimic subjects, but they did not identify them clearly (Aono & Kumashiro, 1983; Engel & Meier, 1988). At this time, it would be premature to make conclusions about the presence or absence of alexithymia in a bulimic population. The only study that examined alexithymia in obese populations found that obese individuals were generally more alexithymic than normal-weight controls. Finally, the research has only examined the relationship between alexithymia and disordered eating in clinical groups; this relationship has not been examined in nonclinical groups. This is important, because varying degrees of disordered eating have been found in normal populations (Klemchuk, Hutchinson, & Frank, 1990; Kristeller & Rodin, 1989; Langer, Warheit, & Zimmerman, 1991; Lundholm & Wolins, 1987).

Therefore, the present study examined the relationship between alexithymia and disordered eating in college women. This study improved on previous studies in a number of ways. First, studies examining the relationship between eating pathology and alexithymia have included anorexic and obese pathology, but no study has specifically examined bulimic pathology and alexithymia.

This study examined the relationship between all three types of eating pathology (i.e., anorexia, bulimia, and obesity) and alexithymia. In addition, previous studies have examined clinical groups of eating disordered individuals involved in either inpatient or outpatient treatment for their disorders. This study employed a sample of college women and examined both eating pathology and alexithymia on a continuum in a normal sample to determine whether the relationship between eating pathology and alexithymia holds up in a nonclinical population.

Second, studies examining the relationship between eating pathology and alexithymia have used either psychometrically unsound measures of alexithymia or psychometrically sound, single-dimension measures of alexithymia. This study measured alexithymia with the Toronto Alexithymia Scale (TAS), a well-validated measure of alexithymia that taps all the relevant domains of the alexithymia construct. A recent study (Hendryx, Haviland, & Shaw, 1991) suggested that alexithymia is multidimensional, and it is important to measure all of the dimensions of alexithymia. The present study specifically examined the relationship between the various dimensions of alexithymia and the various behavioral and personality characteristics associated with disordered eating.

Finally, the interoceptive awareness (IA) subscale of the Eating Disorder Inventory (EDI) supposedly measures alexithymic characteristics common to individuals with eating disorders. A recent study found no relationship between the IA subscale on the

EDI and the SAT9, a measure of symbolic functioning. Perhaps, the IA subscale measures a dimension of alexithymia other than symbolic functioning. This study looked at the relationship between the IA subscale on the EDI and the subscales on the TAS to determine which dimension of alexithymia the IA subscale most closely taps.

Hypotheses

The first hypothesis was that disordered eating characteristics (i.e., characteristics of anorexia, bulimia, and obesity) would be positively related to alexithymia.

More specifically, the second hypothesis was that disordered eating characteristics would be most strongly related to the two feeling factors on the alexithymia scale (i.e., difficulty identifying and communicating feelings). The other two factors, external thinking and daydreaming, have not been theoretically or empirically linked to eating pathology.

The third hypothesis was that the interoceptive awareness subscale of the EDI would measure a dimension of alexithymia most closely related to the feeling dimensions.

CHAPTER II

METHODS

Subjects

The subjects for this study were recruited from the undergraduate introductory psychology course at Texas Tech University. Subjects who volunteered to participate in the study received credit toward a course requirement. Only female students were asked to participate. This population was chosen because most men in a nonclinical college population exhibit normal eating patterns, whereas as many as 50% of college women exhibit markedly disturbed eating patterns (Kristeller & Rodin, 1989).

Data were collected from 320 women. Nine women failed to follow instructions, so the data for these women were eliminated from the analyses. In addition, four women were not weighed, so the data for these women were deleted. Because one woman did not follow instructions and refused to be weighed, a total of 12 subjects' data were deleted, and analyses were completed on a sample of 308 women.

Procedure

Approval of the human subjects committee was obtained before data collection began. Times and locations for group testing sessions were provided before the testing dates. Each group consisted of between 10 and 30 students. At each testing session, the investigator greeted the subjects and thanked them for participating in the study. The investigator then gave a brief

description of the study. After distribution of the questionnaire packets, subjects were instructed to read, sign, and pass forward the consent forms. To maintain confidentiality, signed consent forms remained separate from the remainder of the questionnaire packet, and subjects were instructed not to write their names or social security numbers on the questionnaires. The subjects were then instructed to read the cover letter and proceed with filling out the questionnaires. The questionnaire packet consisted of the Toronto Alexithymia Scale (a measure of alexithymia), the Eating Disorder Inventory (a measure of the behavioral and psychological aspects of anorexia and bulimia), and Background and Personal History questions (demographic information, eating and weight control history).

Subjects were asked to go individually to a different room to turn in their completed questionnaire packets and pick up an experiment participation slip. In the other room, each subject was handed a small slip of paper presenting proof of participation in the study and a page listing phone numbers where counseling could be arranged if any of the questionnaire content was disturbing. For each subject who agreed to be weighed, weight in pounds was recorded on the questionnaire. Subjects were not informed in advance that they would be weighed, but they were told that being weighed was voluntary. Only three subjects refused to be weighed, and one subject in a wheelchair could not be weighed. The data for these four subjects were deleted from the analyses. Any questions that subjects had about the study were answered

before they left. Because no manipulation or deception occurred, there was no formal debriefing at the end of the testing session. Copies of the consent form, the questionnaires, and the list of counseling center phone numbers used in this study can be found in Appendix G.

Instruments

Eating Disorder Inventory

The Eating Disorder Inventory (EDI; Garner & Olmsted, 1984) is an assessment instrument designed to measure a number of psychological and behavioral traits associated with anorexia nervosa and bulimia. This self-report questionnaire is composed of 64 clinically derived items rated on a 6-point Likert format with responses ranging from "always" to "never." The EDI yields scores on eight subscales constructed by principal components analysis. The first three subscales (drive for thinness, bulimia, body dissatisfaction) assess attitudes and behaviors related to body shape and eating. The additional five subscales (ineffectiveness, interpersonal distrust, perfectionism, introceptive awareness, and maturity fears) measure traits thought to be fundamental psychopathological characteristics of individuals with eating disorders.

The EDI does not provide a unitary score for identifying clinically severe eating disorders or for differentiating between anorexia nervosa and bulimia. Instead, the manual provides norms with 99% confidence intervals for clinical and nonclinical groups.

In addition, the EDI is used as a screening instrument in nonclinical populations to identify individuals who are likely to be weight-preoccupied. According to the manual, a conservative cut-off point for identifying college women as weight-preoccupied is a score at or above the mean for the anorexic patients on the drive for thinness subscale (i.e., a score greater than or equal to 14). The cut-off point for identifying bulimic tendencies in college women is a score at or above the mean for anorexic patients with bulimic symptoms on the bulimia subscale (i.e., a score greater than or equal to 11).

Extensive reliability and validity data have been reported for the EDI (Garner & Olmsted, 1984). The full-scale test-retest reliability for nonclinical samples is high (.96), and each subscale has good test-retest reliability (ranging, except for one subscale, from .97 for the body dissatisfaction subscale to .81 for the interpersonal distrust subscale). Only the maturity fears subscale produced a questionable test-retest reliability value (.65). Test-retest reliability for a group of women at risk for an eating disorder, based on elevated EDI scores, was equivalent to reliability coefficients for the nonclinical groups (Wear & Pratz, 1987). In addition, each subscale has adequate internal consistency reliability with coefficient alphas ranging from .79 to .93 (Raciti & Norcross, 1987). Subscale intercorrelations range from .07 to .62 for anorexics and from .11 to .67 for college students, indicating that the EDI subscales are not independent constructs. However, all eight EDI subscales made a

significant contribution in a discriminant function analysis differentiating groups of anorexic patients, weight-preoccupied college women, and non-weight preoccupied college women (Garner, Olmsted, Polivy, & Garfinkel, 1984).

Adequate criterion-related validity was demonstrated in a study in which correlations between clinicians' ratings and EDI self-reports by anorexics ranged from .43 to .68 for the eight scales (Garner, Olmsted, & Polivy, 1983). Other validation studies included group comparisons and focused on convergent and discriminant validity. Relative to each other, a variety of clinical, subclinical, and nonclinical comparison groups scored as predicted on specific subscales (Garner & Olmsted, 1984). Finally, each scale demonstrated significant positive correlations with established measures of conceptually similar constructs, but each scale was unrelated to established measures of dissimilar constructs (Garner & Olmsted, 1984; Garner, Olmsted, & Polivy, 1983).

The EDI has been used extensively in the eating disorder literature. The EDI was used in this study because it taps attitudes and behaviors found in both anorexic and bulimic pathology. Most other well-validated measures of eating disorders focus exclusively on either anorexic (e.g., Eating Attitudes Test, EAT; Garner & Garfinkel, 1979) or bulimic (e.g., Bulimia Test-Revised, BULIT-R; Thelen, Farmer, Wonderlich, & Smith, 1991) symptomatology. Moreover, the EAT and the BULIT-R correlate .68 with each other suggesting that they tap overlapping constructs.

Toronto Alexithymia Scale

The Toronto Alexithymia Scale (TAS; Taylor, Ryan, & Bagby, 1985) is a self-report assessment instrument designed to measure degree of alexithymia. The TAS was developed using a construct-oriented, factor-analytic approach. The authors defined five content areas thought to reflect the alexithymia construct and wrote 41 items reflecting the identified content areas. Following item analysis and exploratory factor analysis, 26 items were selected because of their high correlations with the total scale or their high correlations with one factor, and their low correlations with a measure of social desirability. Each of the 26 TAS items is rated on a 5-point Likert scale, with scores on each item ranging from 1 (labeled "strongly disagree") to 5 (labeled "strongly agree") and total scores ranging from 26 to 130. Cutoff scores for defining alexithymic and nonalexithymic groups were determined using analyses designed to maximize sensitivity, specificity, and predictive value. Full-scale scores of 74 or greater define the alexithymic range, and full-scale scores of 62 or less define the nonalexithymic range (Taylor, Bagby, Ryan, Parker, Doody, & Keefe, 1988). Although these cut-offs have been established to identify distinct groups of alexithymics and nonalexithymics, results from studies employing the TAS have found that scores on the TAS are continuous and normally distributed in nonclinical populations (Loiselle & Dawson, 1988; Taylor & Bagby, 1988).

In the relatively short amount of time since the construction of the TAS, extensive reliability and validity information has been reported. The TAS has adequate internal consistency reliability ($\alpha=.79$), and good test-retest reliability ($r=.82$, $.75$, $.77$) for 1-week, 5-week, and 3-month periods, respectively (Taylor, Ryan, & Bagby, 1985). Factor-analytic studies employing clinical and nonclinical populations have yielded a four-factor structure congruent with the operationalized definition of the alexithymia construct (Bagby, Taylor, Parker, & Loisel, 1990). The four factors (i.e., inability to identify feelings, inability to communicate feelings, external thinking, and lack of daydreaming) have internal consistency reliabilities ranging from $.64$ to $.83$, and factor intercorrelations ranging from $-.03$ to $.26$ (Hendryx, Haviland, & Shaw, 1991; Taylor, Ryan, & Bagby, 1985). Adequate criterion-related validity was demonstrated by a study in which TAS scores were significantly higher for patients identified by two of three raters as alexithymic than for the group identified as nonalexithymic (Taylor et al., 1988). Convergent and discriminant validity has been demonstrated by a number of studies in which scores on the TAS were significantly positively correlated with measures of conceptually similar constructs and significantly negatively correlated with measures of conceptually opposite constructs (Bagby, Taylor, & Atkinson, 1988; Bagby, Taylor, & Parker, 1988; Bagby, Taylor, & Ryan, 1986; Taylor, Bagby, Ryan, & Parker, 1990).

The TAS was used in this study because it is currently the most psychometrically sound measure of all the content areas of alexithymia. Other self-report measures (i.e., SSPS & MMPI-A) were developed without the proper concern for test construction procedures (Apfel & Sifneos, 1979; Kleiger & Kinsman, 1980; Taylor, Bagby, Ryan, & Parker, 1990). A reliable and valid projective measure of alexithymia, the SAT9, measures only one facet of alexithymia, symbolic function (Cohen, Auld, Demers, & Catchlove, 1985). Several interview measures of alexithymia (i.e., BIQ & APRQ) are also available, but these measures have been found to have methodological problems (Apfel & Sifneos, 1979; Krystal, Giller, & Cicchetti, 1986). The Beth Israel Questionnaire (BIQ) has poor interrater reliability, and the cutoff score of 6 for identifying alexithymic individuals was arbitrarily established (Taylor & Bagby, 1988). The Alexithymia Provoked Response Questionnaire (APRQ) minimizes the problems of interrater reliability and interviewer bias found in the BIQ, but the authors have not yet reported information about validity, internal consistency, or factor structure (Taylor & Bagby, 1988; Taylor, Bagby, Ryan, & Parker, 1990).

Background and Personal History

The background and personal history portion of the questionnaire consisted of questions used in previous studies and questions written by the author to collect demographic information, information about weight control and eating, and

information about other behaviors (e.g., substance abuse, stealing, menstrual irregularities) often found associated with disturbed eating (Kent & Clopton, 1992; Raciti, 1991).

Data Treatment

The EDI and the TAS were scored according to the instructions of the authors to enable comparisons to be made with previous findings and published norms (Garner & Olmsted, 1984; Taylor, Ryan, & Bagby, 1985). For the purpose of data analyses in this study, however, the EDI and the TAS were scored somewhat differently. A complete description of the alternative scoring method and the rationale for using that scoring method can be found on pages 26 and 28 in the results section of this document.

In addition, each subject was assigned a weight discrepancy value (i.e., weight index) that indicated the percent that the subject was underweight or overweight. The weight index value was determined by calculating the individual's deviation from an expected weight range based on that individual's age and height (Metropolitan Life Insurance Company, 1983). A positive value was assigned to those individuals who were overweight, and a negative value was assigned to those individuals who were underweight. For example, if an individual weighing 150 lbs. had a desirable weight limit of 120 lbs. in the Metropolitan Life tables, her weight discrepancy value would be $+.25$ (30 lbs. over the desired value divided by desired weight limit of 120 lbs.). Calculated in this way, the "index" indicates the percentage that each individual

deviates from a desirable weight range and whether the deviation was toward thinness or heaviness.

CHAPTER III

RESULTS

The results for this study will be presented in the following order: (a) sample characteristics, (b) descriptive statistics for each of the measures, (c) examination of the three hypotheses, (d) findings for a canonical correlation of EDI subscales and weight index with TAS scores, and (e) supplemental analyses examining the relationship between eating behaviors and alexithymia.

Sample Characteristics

The description of the sample will be divided into two sections. The first section will discuss general demographic information, and the second section will discuss information about weight and eating behaviors.

General Information

The research subjects were young, with 71 percent age 19 or younger, 19 percent between age 20 and 23, and only 10 percent older than 23. Of the 308 women, 69 percent were college freshmen, 21 percent were college sophomores, and the remaining 10 percent were college juniors and seniors. Sixty-eight percent had an "A" or "B" average in their previous semester of school. Ethnic identification was primarily White non-Hispanic (79%), but a sizeable Hispanic minority (15%) was also represented. Black (2%) and Oriental (2%) minorities were smaller and equal in size. The majority of subjects (56%) were from urban areas of 50,000 or larger. Total family income was reported as \$35,000 or higher by

64% of the sample. Finally, 40 percent reported a Protestant religious affiliation, 22 percent were Catholic, and the remainder another affiliation (30%) or no affiliation (8%).

Weight and Eating

Feelings about weight, body shape, and appearance differed among individuals in the sample. A majority of the sample perceived themselves as overweight (51%), while 36 percent viewed themselves as being of normal weight, and the remaining 13% saw themselves as thin. However, according to standards set by the Metropolitan Life Insurance Company (1983), fewer individuals (38%) would be classified as overweight, and more individuals (25%) would be classified as underweight. The majority of individuals in the sample were dissatisfied with the shape of their bodies (58%), while 32 percent were satisfied with the shape of their bodies, and the remainder (10%) were neither satisfied nor dissatisfied with their body shape. One-half of the individuals in the sample was satisfied with their appearance, while 39 percent were dissatisfied with appearance, and the remainder (11%) were neither satisfied nor dissatisfied with their appearance.

Several behaviors were reported as methods of weight control by individuals in the sample. Thirty-two percent of the sample reported having used strict dieting (less than 1200 calories per day), and 47% of the sample had fasted (skipped meals for an entire day). Seventy-one percent of the subjects had used

exercise to control weight. Smaller percentages spit out food (17%), vomited (15%), used laxatives (9%), or used diuretics (8%) to control weight. In addition, difficulties with food intake were also reported. Forty-nine percent of subjects had engaged in binge eating, and 12 percent of subjects, which is roughly 24 percent of those who reported binge eating, reported "often" or "always" feeling out of control while binge eating. Finally, 13 percent of the subjects had had an eating binge within the last week.

For some subjects, eating and general concerns about eating interfered with other important life areas. For 9% of the subjects, eating often interfered with relationships, and eating often interfered with studies for 5% of the subjects. In addition, eating sometimes interfered with relationships (18%) and studies (15%) for a larger proportion of the sample.

Using norms from the Eating Disorder Inventory manual as a guide, only one individual in the sample could be identified as weight preoccupied, and all of the subjects were below the cut-off point for identifying individuals with bulimic tendencies. However, one percent of the sample (2 subjects) reported having been in inpatient treatment for an eating disorder, and two percent of the sample (6 subjects) reported having been in outpatient treatment for an eating disorder. This discrepancy between classification of eating disorders using the EDI and classification based on actual participation in therapy for an eating disorder supports the literature suggesting that accurate

diagnosis cannot be made from self-report measures of eating disorders in the absence of a clinical interview (Fairburn & Beglin, 1990).

Descriptive Statistics

Table 1 provides the mean scores and standard deviations for the Toronto Alexithymia Scale and the Eating Disorder Inventory for the total sample. Two sets of figures are found in Table 1. The figures enclosed in parentheses represent the descriptive statistics for this sample with the measures scored as the authors had intended (Garner & Olmsted, 1984; Taylor, Ryan, & Bagby, 1985). This was done to allow for a comparison of this sample with the norms on the measures. However, there are several problems with scoring the measures as the authors intended. First, when the EDI is scored as the authors intended, the distributions for this sample of individuals are non-normal. Normality of the distributions of subjects' scores on each of the measures is a necessary prerequisite of performing multivariate statistics. Second, because each of the subscales on the TAS and the EDI has a different number of items, their means cannot be compared. For example, it cannot be determined if the sample has more difficulty identifying or communicating feelings.

These difficulties were corrected by scoring the measures somewhat differently. Essentially, the alternative scoring method consisted of calculating the average score on each subscale for each subject. For the TAS, the average score was based on item

Table 1

Descriptive Statistics for Subscales of the Eating Disorder Inventory and the Toronto Alexithymia Scale.

Scale	Mean	<u>SD</u>	Alpha
Eating Disorder Inventory			
Drive for Thinness	3.33 (3.33)	1.17 (3.51)	.88
Interoceptive Awareness	2.73 (1.93)	0.82 (2.77)	.84
Bulimia	2.29 (0.70)	0.87 (1.39)	.84
Body Dissatisfaction	4.16 (10.97)	1.31 (7.42)	.92
Ineffectiveness	2.50 (1.93)	0.83 (2.73)	.90
Maturity Fears	2.80 (2.19)	0.71 (2.15)	.79
Perfectionism	3.89 (3.59)	0.92 (2.90)	.74
Interpersonal Distrust	2.67 (2.39)	0.87 (2.87)	.82
Toronto Alexithymia Scale	2.49 (64.70)	0.51 (13.29)	.80
Identifying Feelings	2.55 (20.39)	0.92 (7.37)	.84
Daydreaming	2.15 (10.73)	0.78 (3.92)	.74
External Thinking	2.40 (14.38)	0.66 (3.98)	.64
Communicating Feelings	2.74 (19.21)	0.80 (5.58)	.75

Note. Means for the Eating Disorder Inventory subscales could vary from 1.0 to 6.0, and means for the Toronto Alexithymia Scale and its subscales could vary from 1.0 to 5.0. Means and standard deviations enclosed in parentheses are based on scoring according to the instructions of the authors of the measures.

responses ranging from 1 to 5. For the EDI, the average score was based on item responses ranging from 1 to 6. For both scales, higher scores were more pathological. The set of figures based on this alternative scoring system can be found outside of the parentheses in Table 1. This alternative method of scoring permits comparisons among subscales (e.g., showing that some subjects experience more body dissatisfaction than interpersonal distrust) and results in more normally distributed scores on the Eating Disorder Inventory. Because of their superior statistical properties, the figures outside the parentheses were used in the remainder of the analyses. Finally, the internal consistency reliability (alpha) for each of the measures is also provided in Table 1.

Tests of the Hypotheses

Correlational analyses were conducted to examine the three hypotheses. The results of these analyses can be found in Table 2.

Hypothesis I

The first hypothesis predicted that disordered eating characteristics would be positively related to alexithymia, and this hypothesis was mostly supported by the following results. The overall score for the Toronto Alexithymia Scale (TAS) had significant positive correlations with all of the Eating Disorder Inventory subscales except the perfectionism subscale. However, the overall TAS scores were not significantly correlated with the

Table 2

Correlations Between Eating Disorder Variables and Scores on the Toronto Alexithymia Scale.

Eating Disorder Variables	TAS Scores				
	TAS	IDF	DDR	EXT	COF
EDI Subscales					
Drive for Thinness	.19**	.25**	-.04	-.02	.17**
Interoceptive Awareness	.44**	.62**	-.10	-.15**	.40**
Bulimia	.26**	.33**	-.06	-.05	.26**
Body Dissatisfaction	.16**	.19**	-.05	-.03	.19**
Ineffectiveness	.47**	.51**	-.04	-.07	.53**
Maturity Fears	.34**	.36**	-.01	.03	.33**
Perfectionism	-.02	.05	-.07	-.14*	.04
Interpersonal Distrust	.48**	.31**	.00	.04	.69**
Weight Index	.09	.10	.00	.00	.10
Lower Index	-.37	-.37	.00	.03	-.40
Upper Index	.25*	.28*	.02	-.04	.24

Note. TAS=Toronto Alexithymia Scale, IDF=Identifying Feelings, DDR=Daydreaming, EXT=External Thinking, and COF=Communicating Feelings. Correlations were based on data from 308 subjects, except correlations with Lower Index (22 subjects) and Upper Index (61 subjects). * $p < .05$, ** $p < .01$.

subjects' weight indexes. A plot of the relationship between the overall TAS scores and the weight index values suggested that the relationship between weight and TAS scores differed for those who were at least 10% overweight (61 subjects) and those who were at least 10% underweight (22 subjects). For those individuals who were at least 10% overweight, there was a positive correlation between weight and alexithymia, $r(60) = .25, p < .05$. In contrast, for those individuals who were at least 10% underweight, there was a negative relationship between weight and alexithymia, $r(21) = -.37, p > .05$. Together, these two correlations suggest that as individuals' weights deviate to a greater degree from a desirable weight range, they are more likely to manifest alexithymic deficits. However, the overall correlation of the TAS and the weight index was not statistically significant, and the negative correlation for the underweight subjects was also nonsignificant. The correlations in Table 2 for the overall TAS scores and the eating disorder variables generally support the first hypothesis.

Hypothesis II

The second hypothesis was that the eating disorder characteristics would be related to the identifying and communicating feelings dimensions of alexithymia, but would be unrelated to the external thinking and daydreaming dimensions of alexithymia. In support of the second hypothesis, all EDI subscales, except the perfectionism subscale, were significantly positively correlated with the two TAS factors examining abilities

to identify and communicate feelings. EDI subscale correlations with the TAS daydreaming and external thinking subscales were mostly nonsignificant. However, the interoceptive awareness subscale and the perfectionism subscale on the EDI had significant negative correlations with the external thinking factor on the TAS. The weight index values had no significant correlations with any of the TAS subscales. Given the relationships between weight and the overall TAS score, additional analyses were conducted for underweight and overweight individuals to examine the relationships between the alexithymia subscales and discrepancy from desirable weight. For the group of individuals who were at least 10% underweight, there were nonsignificant, but fairly sizeable, negative correlations between weight and inability to identify and communicate feelings and no relationship between weight and the other alexithymic characteristics. For subjects who were at least 10% overweight, there were positive correlations between weight and the inability to identify and communicate feelings. Thus, individuals whose weights were most discrepant from desirable weights were most likely to have difficulty identifying and communicating feelings. The correlations in Table 2 for the TAS subscales and the eating variables mostly support the second hypothesis.

Hypothesis III

It was expected that the interoceptive awareness subscale of the Eating Disorder Inventory would be related to the alexithymic

inabilities to identify and communicate feelings, and unrelated to the alexithymic dimensions of external thinking and daydreaming. As expected, the interoceptive awareness subscale on the EDI had significant positive correlations with the overall TAS scores and with the TAS subscales indicating difficulty identifying and communicating feelings. In addition, the interoceptive awareness subscale on the EDI had a significant negative correlation with the external thinking factor on the TAS. The correlations reported in Table 2 for the interoceptive awareness subscale and the dimensions of alexithymia mostly support the third hypothesis.

Canonical Correlation

Canonical correlational analysis provides information about the number of dimensions along which two sets of variables are related. In this study, a canonical correlational analysis was performed to examine the relationship between alexithymia variables and disordered eating variables (SAS Institute, 1985, chap. 12). The alexithymia variables measured daydreaming, external thinking, inability to identify feelings, and inability to communicate feelings. The disordered eating variables measured drive for thinness, interoceptive awareness, bulimia, body dissatisfaction, ineffectiveness, maturity fears, perfectionism, interpersonal distrust, and variation from desirable weight. For all variables, larger numbers reflected more of the specific dimension being measured.

Any discussion of canonical correlation is more easily understood after a review of some basic terminology. In canonical correlation, there are variables, canonical variates, and pairs of canonical variates. Variables are the original variables measured in the research (e.g., daydreaming, drive for thinness). In a canonical correlation, each set of variables (i.e., the alexithymia set of variables and the disordered eating set of variables) occupies one side of the equation. Canonical variates are linear combinations of variables on each side of the equation. Finally, two linear combinations, one for each set of variables, form a pair of canonical variates. The correlation between each pair of canonical variates is called a canonical correlation.

Statistically, the set of variables on one side of the equation (i.e., eating disorder variables) is combined to produce a predicted value that has the highest correlation with the predicted value of the other set of variables (i.e., alexithymia variables). After extraction of the first canonical variate pair, the variance not accounted for by the first canonical variate pair, which is called residual variance, is subjected to the same procedure. That is, the residuals on one side of the equation form a linear combination that has the highest correlation with the linear combination of the residuals on the other side of the equation. These procedures ensure that the pair of canonical variates extracted at each step is orthogonal to other pairs of canonical variates. The number of canonical variates extracted is equal to the number of the smaller set of variables. In this

study, four canonical variates were extracted, because the smaller set of variables (i.e., the alexithymia variables) had four variables. Each combination of variables can be thought of as a dimension along which the constructs may be related.

After extraction of the canonical variates, significance tests can be performed. Generally, Wilks' lambda, a ratio of generalized variances, is computed and converted to an approximation of an F test to assess the statistical significance of the canonical correlations (Rao, 1952). For this study, the first canonical correlation was .75 (56% of the variance); the second canonical correlation was .58 (33% of the variance). The remaining two canonical correlations were .20 and .06.

Several steps are used to test the significance of canonical correlations. Initially, an overall significance test for all the canonical correlations is conducted. If the overall test is significant, it is assumed that at least the first canonical correlation is significant. After the first significance test, another significance test is conducted with the variance of the first canonical correlation removed. If the second test is significant, it is assumed that at least the second canonical correlation is also significant. This procedure of removing the variance of one canonical correlation at each successive step and conducting another statistical test is carried out until the results of one of the analyses is nonsignificant. When nonsignificance is found, all of the remaining canonical correlations are known to be nonsignificant. For the current

study, the overall relationship of eating disorder characteristics and alexithymia with all four canonical correlations included was statistically significant, approximate $F(36, 1107) = 12.48$, $p < .0001$, and the relationship with the first canonical correlation removed was also statistically significant, approximate $F(24, 859) = 5.97$, $p < .0001$. Subsequent approximate F -tests were not significant. The first two pairs of canonical variates, therefore, accounted for the significant relationships between the two sets of variables.

There are several ways to assess the importance of canonical variates after statistical significance has been determined. The first is to examine the strength of the relationship between the canonical variate pairs. Convention suggests that canonical variate pairs should be interpreted when they are statistically significant and account for at least 30% of the overlapping variance (Tabachnick & Fidell, 1989). Using this convention as a guide, the first two canonical variate pairs extracted in this study will be interpreted, because they accounted for 56% (first canonical variate pair) and 33% (second canonical variate pair) of the overlapping variance. The second way to assess the importance of canonical variates is to examine the strength of the relationship between the canonical variate and the variables on the same side of the equation (i.e., percent variance). Generally, variables with correlations of at least .30 are interpreted as part of the variate (Tabachnick & Fidell, 1989). In addition, standardized canonical variate coefficients provide

information about the contribution of a variable to a canonical variate after the contribution of variables with higher correlations with the canonical variate has been removed.

The final way to assess the importance of canonical variates is to examine the strength of the relationship between the variate on one side of the equation and the variables on the other side of the equation (i.e., redundancies). The data that will aid in the interpretation of the first two pairs of canonical variates appear in Tables 3 and 4. Shown in Table 3 are correlations between the variables and the canonical variates, standardized canonical variate coefficients, and canonical correlations. In Table 4, percents of variance and redundancies are presented.

With a cutoff correlation of .30, the variables in the disordered eating set that were correlated with the first canonical variate were drive for thinness, interoceptive awareness, bulimia, body dissatisfaction, ineffectiveness, maturity fears, and interpersonal distrust. Among the alexithymia variables, inability to identify feelings and inability to communicate feelings correlated with the first canonical variate. Because canonical variates are always interpreted in pairs, the first pair of canonical variates indicated that those who pursue thinness, lack internal awareness, have bulimic symptoms, are dissatisfied with their bodies, feel ineffective and immature, and distrust others also tend to have difficulty identifying and communicating their feelings. In short, the alexithymia characteristics of difficulty identifying and communicating

Table 3

Canonical Correlation for Eating Disorder and Alexithymia
Variables: Correlations (r) and Standardized Canonical
Coefficients (B).

Subscales	1st Canonical Variate		2nd Canonical Variate	
	r	B	r	B
Eating Disorder Variables				
Drive for Thinness	.31	-0.22	-.22	0.13
Interoceptive Awareness	.77	0.41	-.59	-1.02
Bulimia	.45	0.02	-.23	0.15
Body Dissatisfaction	.30	0.05	-.07	-0.06
Ineffectiveness	.82	0.30	-.16	-0.02
Maturity Fears	.50	0.04	-.14	-0.10
Perfectionism	.11	0.02	-.09	-0.03
Interpersonal Distrust	.85	0.54	.49	0.90
Weight Index	.15	0.05	-.03	-0.06
Alexithymia Variables				
Identifying Feelings	.74	0.35	-.57	-1.03
Daydreaming	-.07	-0.11	.17	0.10
External Thinking	-.08	-0.20	.33	0.23
Communicating Feelings	.92	0.78	.37	0.86
Canonical Correlation	.75		.58	

Table 4

Canonical Correlation for Eating Disorder Variables and
Alexithymia Variables: Percentage of Variance and Redundancies.

Variable Set	1st Canonical Variate	2nd Canonical Variate
Eating Disorder Variables		
Percent of Variance	.29	.08
	Total: .37	
Redundancy	.17	.03
	Total: .20	
Alexithymia Variables		
Percent of Variance	.35	.15
	Total: .50	
Redundancy	.20	.05
	Total: .25	

Note. Totals provide: (1) the total percentage of the variance for both canonical variates explained by each set of variables and (2) the total redundancy (i.e., amount of variance explained for each canonical variate by the opposite set of variables) for both canonical variates for each set of variables.

feelings were related to most eating disorder variables in this study, as predicted by the second hypothesis.

The second canonical variate in the disordered eating set was negatively correlated with interoceptive awareness and positively correlated with interpersonal distrust. The corresponding canonical variate for the alexithymia set of variables was negatively correlated with inability to identify feelings and positively correlated with external thinking and communicating feelings. As a pair, these variates suggest that individuals with good internal perception and good ability to identify feelings, but distrust in others also tend to have external thinking and difficulty communicating feelings.

Supplemental Analyses

Three sets of supplemental analyses were conducted. The first set of supplemental analyses examined the relationship between the dimensions of alexithymia and specific behaviors associated with disordered eating. The second set of supplemental analyses examined the relationship between several self-destructive behaviors not directly associated with disordered eating and the dimensions of alexithymia and disordered eating, and the third set of analyses examined how several elements of personal history were related to alexithymia and disordered eating variables. A final section reports other medical and psychological difficulties of the subjects.

First, correlational analyses examined the relationship between the dimensions of alexithymia and items measuring specific behaviors associated with disordered eating. The results of these analyses can be found in Table 5. In addition, the items administered to subjects can be found in Appendix G. Statistically significant positive correlations were found between inabilities to identify and communicate feelings and items measuring the following: (a) body dissatisfaction (Q102); (b) frequency and recency of fasting (Q109, Q110); (c) frequency, duration, and recency of binge eating (Q115, Q117, Q118), (d) feeling out of control when binge eating (Q116), (e) skipped menstrual periods (Q137), and (f) eating interfering with relationships and studies (Q132, Q133). In addition, small, but statistically significant, negative correlations were found between duration and recency of strict dieting (Q106, Q107) and external thinking.

There were no significant correlations between the dimensions of alexithymia and items measuring: (a) subjects' perception of current weight (Q96); (b) others' perception of subjects' current weight (Q98); (c) frequency, duration, and recency of vomiting (Q121, Q122, Q123); (d) frequency, duration, and recency of laxative use (Q125, Q126, Q127); and (e) frequency, duration, and recency of diuretic use (Q129, Q130, Q131).

In the second set of supplemental analyses, the relationship between several self-destructive behaviors and the dimensions of alexithymia and disordered eating was examined. There was no

Table 5

Correlations Between Eating Behaviors and Alexithymia Scores.

Item	TAS	IDF	DDR	EXT	COF
Q96	.09	.09	.03	-.02	.08
Q98	.09	.04	.05	.04	.10
Q102	.17**	.17**	-.01	-.07	.23**
Q105	.01	.05	.01	-.08	.01
Q106	.03	.08	.03	-.13*	.03
Q107	.00	.03	.02	-.12*	.03
Q109	.14*	.17**	.08	-.06	.10
Q110	.06	.16**	-.03	-.10	.03
Q115	.16**	.24**	-.04	-.09	.15**
Q116	.20**	.26**	-.01	-.09	.19**
Q117	.16**	.26**	-.09	-.09	.17**
Q118	.16**	.25**	-.07	-.11	.16**
Q121	.11	.09	.04	.00	.11
Q122	.08	.07	.07	-.02	.07
Q123	.07	.08	.05	-.01	.04
Q125	.03	.04	.05	-.05	.01
Q126	.04	.03	.07	-.02	.01
Q127	-.01	.02	.04	-.08	-.04
Q129	.08	.05	.07	.03	.06
Q130	.07	.02	.08	.02	.07

Table 5

Continued.

Item	TAS	IDF	DDR	EXT	COF
Q131	.02	-.01	.07	-.01	.02
Q132	.09	.17**	-.06	-.06	.07
Q133	.18**	.29**	-.08	-.03	.12*
Q137	.15**	.19**	-.02	-.02	.14*

Note. TAS=Toronto Alexithymia Scale, IDF=Identifying Feelings, DDR=Daydreaming, EXT=External Thinking, and COF=Communicating Feelings. Items used in this analysis can be found in Appendix G.
 * $p < .05$, ** $p < .01$.

relationship between frequency of alcohol use (Q138) and the alexithymia and eating disorder variables, and only difficulty identifying feelings was related to frequency of drug use (Q139). Frequency of suicidal ideation (Q141) was significantly positively related to all alexithymia and eating disorder variables except daydreaming and external thinking. In addition, a significant negative relationship was found between external thinking and frequency of suicidal ideation (Q141). The results of the second set of supplemental analyses are found in Table 6.

In the third set of supplemental analyses, the relationship between elements of personal history and the dimensions of alexithymia and disordered eating was examined. Subjects' perception of weight as a child (Q100) was significantly positively correlated with drive for thinness, interoceptive awareness, bulimia, and body dissatisfaction and not significantly correlated with other subscales of the Eating Disorder Inventory. Subjects' perception of weight as a child (Q100) was significantly negatively correlated to daydreaming and not significantly correlated with the other dimensions of alexithymia. The extent to which a subject was teased about weight as a child (Q101) was significantly positively correlated with all EDI subscales except interpersonal distrust. In addition, the extent to which a subject was teased about weight as a child was significantly positively correlated with the overall TAS score and the identifying feelings subscale, but not significantly correlated with the other alexithymia subscales. Finally, academic

Table 6

Correlations Between Self-Destructive Behaviors and Subscales from the Toronto Alexithymia Scale and the Eating Disorder Inventory.

Subscales	Self-Destructive Behaviors		
	Q138	Q139	Q141
Toronto Alexithymia Scale	.02	.04	.21**
Identifying Feelings	.07	.14*	.32**
Daydreaming	-.07	-.10	-.06
External Thinking	.05	.02	-.17**
Communicating Feelings	-.03	-.03	.24**
Eating Disorder Inventory			
Drive for Thinness	.06	-.05	.22**
Interoceptive Awareness	.07	.04	.38**
Bulimia	.01	.02	.24**
Body Dissatisfaction	.01	-.04	.19**
Ineffectiveness	.05	.04	.52**
Maturity Fears	.04	.01	.21**
Perfectionism	-.10	-.04	.13*
Interpersonal Distrust	-.04	.00	.34**

Note. Self-destructive behavior items can be found in Appendix G.
 * $p < .05$, ** $p < .01$.

performance (i.e., GPA, Q134) was significantly negatively correlated with interoceptive awareness and maturity fears, but significantly positively correlated with perfectionism. The correlation between academic performance and the other disordered eating and alexithymia variables was nonsignificant. Thus, subjects who had more difficulty identifying feelings and more maturity fears had lower grade point averages, whereas more perfectionistic subjects had higher grade point averages. The results of the third set of supplemental analyses are found in Table 7.

Some subjects in this study had other medical and psychological difficulties. Eight percent of the sample reported very irregular menstrual cycles (i.e., variation greater than 10 days). Three percent of the sample has stopped menstruating, and less than one percent (i.e., 1 subject) has never menstruated. Sixteen percent of the sample reported stealing something since high school, and 13 percent of the sample had made a suicide attempt. Thirteen percent of the sample had been in outpatient therapy for a difficulty other than an eating disorder, and six percent of the sample had been in inpatient therapy for a difficulty other than an eating disorder.

Table 7

Correlations Between Personal History Questions and Subscales of the Eating Disorder Inventory and the Toronto Alexithymia Scale.

Subscales	Personal History Questions		
	Q100	Q101	Q134
Eating Disorder Inventory			
Drive for Thinness	.19**	.13*	-.06
Interoceptive Awareness	.12*	.17**	-.12*
Bulimia	.14*	.17**	-.10
Body Dissatisfaction	.30**	.15**	-.02
Ineffectiveness	.05	.21**	-.09
Maturity Fears	.01	.12*	-.13*
Perfectionism	-.04	.15**	.18**
Interpersonal Distrust	-.02	.08	-.06
Toronto Alexithymia Scale	-.07	.12*	-.10
Identifying Feelings	.04	.19**	-.09
Daydreaming	-.15**	.01	-.03
External Thinking	-.09	-.09	-.11
Communicating Feelings	-.04	.08	-.02

Note. Personal History Questions can be found in Appendix 6.

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

CHAPTER IV

DISCUSSION

The purpose of this study was to examine the relationship of disordered eating and alexithymia in a normal college population. The expected relationships, which were based on the empirical and theoretical literature for eating disorders and alexithymia, were generally found in this study.

Hypotheses

Hypothesis I

Based on prior research findings, the first hypothesis was that disordered eating would be positively related to alexithymia. To test that hypothesis, the relationship between disordered eating, as measured by the Eating Disorder Inventory, and alexithymia, as measured by the Toronto Alexithymia Scale, was assessed. In previous research, there was evidence to suggest that individuals with clinical eating disorders (i.e., anorexia and obesity) were also alexithymic (Aono & Kumashiro, 1983; Bourke, Taylor, & Crisp, 1985; Engel & Meier, 1988; Legorreta, Bull, & Kiely, 1988). The findings of this study using a college sample were consistent with previous research using clinical samples. Each of the characteristics associated with disordered eating as it is defined on the Eating Disorder Inventory, except for perfectionism, had a positive relationship with alexithymia. In addition, as the groups of overweight or underweight individuals became increasingly overweight or underweight, they

tended to experience more alexithymia. Finally, previous research examined the relationship between alexithymia and anorexia and obesity, but no studies directly examined the relationship between bulimic characteristics and alexithymia. The relationship between the bulimia subscale and alexithymia in this study suggests that bulimic characteristics are also related to alexithymia.

Hypothesis II

In contrast to the first hypothesis, which involved the general relationship between disordered eating and alexithymia, the second hypothesis dealt with the relationship of disordered eating and various aspects of alexithymia. The second hypothesis was that disordered eating would be more closely associated with difficulty in identifying and communicating feelings than with external thinking and daydreaming. The relationship between disordered eating, as measured by the EDI subscales, and the dimensions of alexithymia, as measured by the TAS subscales, was assessed. In support of the hypothesis, the results indicated that characteristics of disordered eating, except for perfectionism, were positively related to difficulties in identifying and communicating feelings and were generally unrelated to the external thinking and daydreaming factors. In addition, as the groups of underweight or overweight individuals became more underweight or overweight, they tended to have greater difficulty identifying and communicating feelings.

Several theories of eating disorders suggest that there is a link between disordered eating and affect among anorexic, bulimic, and obese individuals (Bruch, 1947, 1953, 1973; Herman & Polivy, 1980; Kaplan & Kaplan, 1957; Rosen & Leitenberg, 1982, 1985; Swift & Letven, 1984). In addition, previous empirical research established a link between disordered eating and affect among obese and bulimic individuals (e.g., Hudson & Williams, 1981; Johnson & Larson, 1982; Marcus, Wing & Lamparski, 1985; Schlundt, Johnson, & Jarrell, 1986). Although the results of the present study are not able to differentiate the correctness of one theory of eating disorders over another, they suggest that the relationship between disordered eating and affect that is seen in previous empirical research examining groups of individuals with clinical eating disorders is also seen in this sample of college women.

These results are important, because studies examining degree of disordered eating in the general public and normal college samples suggest that there is considerable concern about eating and eating pathology in these populations (Klemchuk, Hutchinson, & Frank, 1990; Kristeller & Rodin, 1989; Langer, Warheit, & Zimmerman, 1991). Thus, there are many college women who experience varying degrees of disordered eating, and this study indicates that their disordered eating is also accompanied by affective disturbance. Furthermore, previous studies of college students with disordered eating patterns and individuals with clinical eating disorders found that the affective

disturbance is manifested by difficulty expressing feelings directly (Garfinkel, Garner, Rose, Darby, Brandes, O'Hanlon, & Walsh, 1983; Kent & Clopton, 1992; Rybicki, Lepkowsky, & Arndt, 1989; Shisslak, McKeon, & Crago, 1990). This study suggests that in addition to the difficulty expressing feelings, difficulty identifying feelings is also related to disordered eating.

Why is there a relationship in this sample between eating pathology and affective disturbance, but not the cognitive disturbance associated with alexithymia? Several explanations are possible. It is possible that alexithymia might function similarly to other disorders that have mild and severe forms. For example, there are mild and severe forms of depression with the more severely depressed individuals showing vegetative symptoms (e.g., severe appetite and sleep disturbances) and the more mildly depressed individual generally free of vegetative symptoms. Mild forms of alexithymia might be characterized by disturbances in affect, whereas more severe forms of alexithymia would also include the cognitive disturbances. Continuing with this line of reasoning, the population of college women may not include the severity of eating pathology necessary to have the cognitive disturbances associated with alexithymia.

There is support for the idea that this college sample did not have the severity of eating pathology associated with the cognitive disturbances of alexithymia. A comparison of this sample and the sample groups in the EDI manual on the EDI subscales provides support for a lack of severity of eating

pathology in this sample. For this sample, all but one mean on the EDI, the mean for the body dissatisfaction subscale, was less than the corresponding subscale mean for the normal female controls in the EDI manual. The mean for the body dissatisfaction subscale for this sample was higher than the mean for the body dissatisfaction subscale for the female controls, but it was still significantly less than the mean on the body dissatisfaction subscale for the anorexic comparison group. Further, for nearly all of the subscales, only small percentages of this sample (0-8%) were at or above the mean for the clinical groups. Again, the exception was for the body dissatisfaction subscale in which 40 percent of this sample was at or above the anorexic and bulimic groups' body dissatisfaction means.

A previous study found this elevated body dissatisfaction pattern and another pattern in a college sample. Klemchuk, Hutchinson, and Frank (1990) identified two subgroups of college women using the EDI, a body dissatisfaction group and an eating disorder group. In the body dissatisfaction group, the women only scored in the pathological range on the body dissatisfaction subscale and did not report other psychological disturbance at pathological levels. In contrast, the eating disorder group demonstrated more pathology of cognitions, attitudes, and behaviors, and they also had poorer overall psychological adjustment. In the present study as in the previous study, the elevated body dissatisfaction scores probably are not indicative of serious eating pathology, because all of the other EDI subscale

means fall below the norms for the female control group in the EDI manual.

In addition, descriptions of more severe forms of eating pathology appear to include the cognitive deficits of alexithymia as well as the affective deficits. For example, a case study of a bulimic woman with borderline personality disorder describes the concrete, highly stimulus-bound cognitive style that is generally found with alexithymic individuals (Lerner, 1983). Finally, subjects' scores on the measures of cognitive disturbance (i.e., external thinking and daydreaming) are significantly less than their scores on the measures of affective disturbance (i.e., identifying and communicating feelings). In summary, it may be that the cognitive disturbance associated with alexithymia was not found to be related to disordered eating in this sample because the sample did not have the severe eating pathology that is generally accompanied by cognitive disturbance. A future study might examine groups of individuals with severe eating disorders using the multidimensional TAS to examine the relationship of severe eating pathology and the various dimensions of alexithymia.

Another explanation for the lack of a relationship between eating pathology and the cognitive deficits of alexithymia can also be supported by the data in the present study. Alexithymic individuals are thought to cope cognitively with their affective deficits, and their cognitive coping style has been labeled external thinking. If individuals with disordered eating use eating to cope with affective deficits, they might not have the

cognitive coping style (i.e., external thinking) associated with alexithymia. The results of the canonical correlation which appear later in the discussion seem to support this explanation for an absence of a relationship between eating pathology and the cognitive deficits of alexithymia. Briefly, the cognitive deficits of alexithymia did not contribute to the first underlying dimension, which included contributions from subscales examining severe eating pathology. However, one cognitive facet of alexithymia (i.e., external thinking) contributed to the second underlying dimension, which represented less severe pathology, milder interpersonal disturbances, and the absence of severe eating pathology.

Thus, at least two explanations are possible for the finding that the cognitive deficits of alexithymia were unrelated to disordered eating in this sample. The first explanation is that individuals in this sample have relatively less severely disturbed eating behaviors, and greater severity of eating pathology than was found in this sample would be accompanied by the cognitive deficits of alexithymia. The second explanation is that disordered eating is used to cope with affective deficits, so cognitive coping with affective difficulties is not necessary and will only be present when individuals are not using eating to cope with affective deficits.

It is puzzling that the relationship between alexithymia and the other dimensions of eating pathology was not found for the perfectionism subscale of the EDI. Several potential measurement

and statistical explanations for this finding can be ruled out. The perfectionism subscale appears to measure what it purports to measure, because the items are face valid, and the perfectionism subscale has been shown to be related to similar constructs (Garner & Olmsted, 1984). In addition, the internal consistency reliability for this sample on the perfectionism subscale is adequate ($r=.74$). Finally, the distribution of scores on the perfectionism subscale for this sample approximates a normal distribution.

If there are no apparent statistical or measurement difficulties to explain the surprising findings regarding the perfectionism subscale, the possibility that perfectionism is not a true dimension of eating disorders should be considered. The perfectionism construct was included in the EDI because Bruch (1978) "suggested that the struggle to live up to perfectionistic achievement standards is a characteristic theme in anorexia nervosa" (Garner & Olmsted, 1984, p. 5). In addition, families with an anorexic member have been described as highly achievement-oriented (Bruch, 1973; Dally, 1969; Kalucy, Crisp, & Harding, 1977). Examination of the means and standard deviations of various groups (i.e., anorexic restrictors, bulimics, and female controls) in the EDI manual and calculation of t -tests could provide evidence about whether perfectionism actually distinguishes groups of eating disordered individuals and normal female controls.

In the EDI manual, restricting anorexics had a mean of 7.7 and a standard deviation of 5.1 on the perfectionism subscale. Bulimic individuals had a mean of 9.1 and a standard deviation of 5.4; female controls had a mean of 6.4 and a standard deviation of 4.3. Although the difference between means is significant for the bulimics and female controls ($t=4.54$, $df=371$, $p<.001$), the difference between the means for the restricting anorexics and the female controls was not significant at an alpha level of .05 ($t=1.74$, $df=322$). In addition, no other subscales on the EDI show such a marked overlap in the distributions of the individuals with eating disorders and the female controls. Thus, perfectionism may not be specific to eating disorders because many individuals without eating disorders are also perfectionistic to the same degree as individuals with eating disorders.

In summary, the relationship between disordered eating and affective disturbance that has been seen previously in clinical samples was also seen in this sample of college women. In addition, this sample of college women did not show any connection between disordered eating and the cognitive disturbances associated with alexithymia. This may be a function of less severity of eating pathology in a college sample than in a clinical sample, or it may be a function of individuals in this sample coping with affect by using food instead of by using a defective cognitive style. Finally, the relationship between disordered eating characteristics and affective disturbance was not present for perfectionism, which may not actually distinguish

individuals with disordered eating patterns from normal individuals.

Hypothesis III

The final hypothesis was that the interoceptive awareness subscale on the Eating Disorder Inventory would be related to two specific deficits of alexithymia: the inability to identify and communicate feelings. As expected, the interoceptive awareness subscale on the EDI was positively related to inabilities in identifying and communicating feelings. In addition, the interoceptive awareness subscale was also negatively related to the external thinking dimension of alexithymia, which suggests that an inability to identify emotions tends to be accompanied by a decrease in external thinking. This finding is surprising, because it fails to support the primary premise of alexithymia; individuals who are unable to identify and communicate their emotions tend to compensate by developing a cognitive style that is tied to external events and actions (Krystal, 1988). However, the correlation between interoceptive awareness and external thinking was small ($r = -.15$), and therefore, accounted for much less variance than the relationship between interoceptive awareness and inabilities to identify and communicate feelings. A replication of the finding between external thinking and interoceptive awareness should be demonstrated before concluding that the primary premise of alexithymia is invalid. In addition,

it is possible that this sample copes with affective difficulties by using food instead of external thinking.

The need for clarification of what the interoceptive awareness subscale measured was raised by Bourke, Taylor, and Crisp (1985) who found that the interoceptive awareness subscale of the EDI was not correlated with the SAT9, a measure of symbolic functioning. Symbolic functioning is the capacity to fantasize or arrange imaginative stimuli into meaningful relationships, and it is considered to be one of the dimensions of alexithymia. Bourke et al. (1985) suggested that the interoceptive awareness subscale and the SAT9 must be measuring distinct facets of alexithymia. The finding of a positive relationship between difficulties in identifying and communicating feelings and the interoceptive awareness subscale indicates that the interoceptive awareness subscale measures the affective dimensions of alexithymia. Because the interoceptive awareness subscale of the EDI and the SAT9 measure different dimensions, a future study might examine whether the SAT9 is related to the cognitive dimensions of alexithymia. Given the nature of the SAT9, creating a story that connects several different objects, the SAT9 would most likely be related to the daydreaming dimension of alexithymia.

Canonical Correlation

The correlational analyses designed to test the hypotheses indicated that a relationship does exist between disordered eating and alexithymia. However, correlations do not provide information

about the dimensions that underlie these two sets of constructs. The canonical correlational analysis, however, identified two important dimensions that underlie alexithymia and eating pathology in a normal college sample.

Examination of the standardized beta coefficients and the significant correlations (i.e., at least .30) for the first canonical variate pair suggests that high scorers on the first canonical variate pair lack inner awareness (i.e., an intrapsychic deficit) and cannot trust others or communicate feelings to them (i.e., an interpersonal difficulty). They feel ineffective, lack coping resources, and turn to their eating habits to structure their environment. The first canonical variate pair supports the first two hypotheses of this study that grew out of an examination of the clinical eating disorders literature.

The second canonical variate pair was not anticipated by the hypotheses of this study, and it shows less severity than the first canonical variate pair. Individuals with high scores on the second canonical variate pair have greater inner awareness, because they do not have the intrapsychic deficit (i.e., inability to identify feelings) found in the first canonical variate. Thus, they would have better coping skills, feel more effective in their environments, and have less need for the extreme forms of coping represented by severely disordered eating. However, their lack of trust and inability to communicate their feelings (i.e., interpersonal deficits) would still lead them to develop somewhat

ineffective, but less severe, coping methods (i.e., external thinking).

The results of the canonical correlation support previous literature suggesting that eating pathology has varying levels of severity (Prather & Williamson, 1988; Rybicki, Lepkowsky, & Arndt, 1989; Williamson, Prather, Upton, Davis, Ruggiero, & Van Buren, 1987). For example, the MMPI was administered to individuals with bulimia, and two distinct groups were identified by cluster analysis (Rybicki, Lepkowsky, & Arndt, 1989). The first group was severely impaired and had poor ego strength and characteristics suggesting an Axis II personality disturbance. The second group, however, could be placed in the neurotic level of adjustment based on the Goldberg index, and they showed some developmental conflicts and adjustment difficulties.

The results of this study also have potentially important implications for treatment of individuals with disordered eating or alexithymia. With an individual scoring highly on the second canonical variate pair, therapy would essentially require an interpersonal focus with the goal of building trust so the individual could begin to communicate her feelings instead of defending against them by focusing on external events. With the individual who scored highly on the first canonical variate pair, therapy would be much more long-term and intensive. After the initial trust has been built, this individual would need to be able to rediscover her feelings before learning to communicate

them. This process would need to occur along with an attempt to reduce behaviors associated with disordered eating.

Supplemental Analyses

Three sets of supplemental analyses were conducted. The first set of supplemental analyses was done to examine the relationship between specific behaviors and experiences associated with eating disorders and the dimensions of alexithymia. The second set of supplemental analyses was done to examine the relationship between several self-destructive behaviors and the dimensions of alexithymia and disordered eating. The final set of supplemental analyses was done to examine the relationship between several elements of personal history and the disordered eating and alexithymia variables.

Although each of the behaviors examined in the first set of analyses is generally associated with one of the eating disorders more than another, this study was not specifically designed to examine and compare the relationships of the three clinical eating disorders and alexithymia. This study employed self-report measures of eating disorders and alexithymia, and previous literature has shown that accurate diagnoses of low probability behaviors (i.e., anorexia and bulimia) cannot be made from a self-report measure without a clinical interview (Carter & Moss, 1984; Fairburn & Beglin, 1990; Williams, Hand, & Tarnopolsky, 1982). Data from this study also indicate the difficulty of identifying anorexic and bulimic individuals using a self-report

measure without a clinical interview. Although several individuals reported receiving inpatient or outpatient treatment for eating disorders, the EDI only identified one subject as weight preoccupied and no subjects met the cutting score for having bulimic tendencies. Thus, the supplemental analyses provide some ideas about relationships between the symptoms of the various eating disorders and alexithymia, but conclusions cannot be made regarding a relationship between specific clinical eating disorders and alexithymia.

The first set of supplemental analyses indicated that individuals who endorsed the following behaviors and characteristics tended to have difficulty identifying and communicating feelings: (a) body dissatisfaction, (b) tendency for thoughts about eating to interfere with relationships and studies, (c) more frequent and more recent fasting, (d) skipped menstrual periods for 3 months or longer when they were not pregnant, (e) a longer history of binge eating, (f) more frequent binge eating, (g) more recent binge eating, and (h) a feeling of being out of control when binge eating. Each of these characteristics and behaviors has been linked to either anorexia, bulimia, or obesity, and the relationships found in the college sample suggest that exploration of the relationship between the four dimensions of alexithymia and eating pathology in clinical groups would be useful. More importantly, however, these results suggest that individuals in normal college populations have some affective difficulties that are associated with disordered eating.

Perhaps, normal individuals use food to modulate their affective experiences in a similar, but more moderate way than individuals with clinical eating disorders, who purportedly use food to modulate their affect.

The second set of supplemental analyses examined the relationship between several self-destructive behaviors and the dimensions of alexithymia and eating disorders. Examination of the relationship between alexithymia and drug and alcohol use yielded only one significant correlation; frequency of drug use was positively related to difficulty identifying feelings. The remainder of the relationships were nonsignificant. This is surprising because previous studies using the TAS have found that about 50% of male substance abusers were alexithymic (Haviland, Shaw, MacMurray, & Cummings, 1988; Taylor, Parker, & Bagby, 1990). It should be noted that previous studies examined only male substance abusers and the present study had only women subjects. Perhaps, the current study found no relationship because women do not show the same pattern as men. It is also possible that the relationship did not surface in this study, because clinical groups were not used, and the relationship does not exist in nonclinical groups. Future studies should examine the relationship between alexithymia and substance abuse in clinical groups of female substance abusers, but the current study suggests that few significant relationships may be found.

The second set of supplemental analyses also failed to find a significant relationship between disordered eating and substance

abuse. Again, this was a surprising finding, because previous research using individuals with clinical eating disorders found that bulimics used alcohol significantly more than controls and drug abuse is the second most frequent disorder in bulimics after affective disorders (Post & Crowther, 1985; Walsh, Roose, Glassman, Gladis, & Sadik, 1985). These findings suggest that individuals in normal college samples with less severe forms of disordered eating do not have the difficulties with substance abuse found in individuals with more severe forms of eating pathology.

One alarming finding came out of the second set of supplemental analyses. There was a significant positive relationship between frequency of suicidal ideation and all of the dimensions of disordered eating and alexithymia except daydreaming and external thinking. In addition, there was a significant negative relationship between external thinking and frequency of suicidal ideation. These findings indicate that individuals in a normal college population who have disordered eating patterns, difficulty identifying and communicating feelings, and a tendency to engage in less external thinking also think about suicide more frequently. Because more frequent thinking about suicide can increase the risk of a suicide attempt, the results of this study suggest that even individuals with subclinical eating and affective difficulties in a normal college population are at some risk for suicide.

The third set of supplemental analyses found that subjects' perception of weight as a child, ranging from thin to overweight, was significantly positively related to drive for thinness, interoceptive awareness, bulimia, and body dissatisfaction and unrelated to ineffectiveness, maturity fears, perfectionism, and interpersonal distrust. The extent to which subjects' were teased about weight as a child was significantly positively correlated with all EDI subscales except interpersonal distrust. These results suggest that the perception of being overweight as a child is related to the development of the behavioral characteristics of eating disorders (e.g., drive for thinness, bulimia), but being teased about weight as a child is worse, because being teased is related to the development of both the behavioral and psychological (e.g., ineffectiveness, maturity fears) characteristics of disordered eating.

Many of the supplemental analyses involved examination of the relationship between items and subscales. Although the subscales generally approximated normal distributions, the distributions of scores for the items were often non-normal (e.g., bimodal, skewed). In addition, item scores often had restricted ranges. Thus, some of the nonsignificant relationships may have resulted from the properties of the distributions of the scores for items rather than the lack of a relationship between the constructs. Despite the difficulties with the distributions of scores for the items, there were significant relationships found, which suggests that those relationships are fairly strong relationships.

Summary

In summary, there was a tendency for disordered eating and the alexithymic deficits in identifying and communicating feelings to co-occur in this sample of college women. In addition, two dimensions seem to underlie disordered eating and alexithymia in this sample. The first underlying dimension represents greater severity, and it is characterized by an intrapsychic deficit (i.e., a lack of awareness of feelings) and an interpersonal deficit (i.e., mistrust of others) along with feelings of ineffectiveness and the behavioral and psychological traits associated with disordered eating. The second underlying dimension represents less severity, and it is characterized by an interpersonal deficit in trusting others and communicating one's feelings to them without feelings of ineffectiveness and extreme coping behaviors (i.e., severely disordered eating). Clearly, the second dimension is much less pathological. Finally, the interoceptive awareness and interpersonal distrust subscales on the Eating Disorder Inventory appear to most closely tap the deficits in identifying and communicating feelings associated with alexithymia. Thus, the possibility of using these two subscales to screen for alexithymic deficits in individuals with eating disorders should be considered and explored further. Finally, these findings indicate that individuals in normal college populations have eating and affective difficulties that are interrelated and deserve attention.

Limitations and Recommendations

As with most research, this study has several limitations. First, the subjects were drawn from college undergraduate classes. For this reason, the results cannot necessarily be generalized to the population at large or to clinical groups of anorexics, bulimics, obese, or alexithymics. In addition, subjects were all women, so the results cannot necessarily be generalized to men. Second, all analyses were correlational, so causal conclusions cannot be drawn from the data. Thus, it cannot be determined whether a deficit in emotional experiences causes eating pathology to develop, whether eating pathology leads to affective deficits, or whether both stem from some other basic difficulty. The conclusions made must be limited to stating that these difficulties often co-occur. In a similar vein, the results support the theories that suggest that there is an affective disturbance associated with disordered eating, even in normal college women. However, the results of this study are not able to differentiate the correctness of one theory over another. For example, several theories suggest that eating serves an anxiety-reduction function (e.g., Kaplan & Kaplan, 1957; Swift & Letven, 1984). This study did not examine anxiety before and after eating to determine whether these theories are more valid than cognitive restraint theories which suggest that anxiety disinhibits cognitive prohibitions against eating (Herman & Polivy, 1980).

This research was exploratory, so it naturally raises many additional questions. Do the results generalize to non-college female populations? Furthermore, do the relationships between eating pathology and deficits in identifying and communicating feelings generalize to women with clinical eating disorders (anorexia, bulimia, and obesity)? Would individuals with clinical eating disorders have the cognitive deficits that were absent in this college population? Would the relationships hold up for men in the general population or men with eating disorders?

A merging of the eating disorders literature and the alexithymia literature raises one additional empirical question. In the alexithymia literature, a recent study found that the two affective dimensions of alexithymia (i.e., inability to identify and communicate feelings) seem to be state dependent, and external thinking and lack of daydreaming (i.e., the cognitive dimensions of alexithymia) appear to be more stable across time (Hendryx, Haviland, & Shaw, 1991). In addition, clinical experience with bulimic individuals and the empirical literature suggest that binge eating is preceded by negative emotions, and purging (i.e., vomiting) is followed by an absence of the negative emotions. Given the state-dependent quality of the affective dimensions of alexithymia and the change in emotional experience observed in bulimic individuals, would ability to identify and communicate feelings differ for bulimics if it were assessed before a binge and after a purge?

The relationship between disordered eating and difficulty identifying and communicating feelings raises theoretical questions as well. If college women with disordered eating have the affective deficits of alexithymia, but lack the cognitive deficits, is it accurate to conclude that they are alexithymic? Furthermore, if individuals with clinical eating disorders showed the relationship between disordered eating and all facets of alexithymia, would they be more alexithymic than the normal college women who have only the affective deficits or would they exclusively be alexithymic (i.e., college women with only affective deficits would not be considered alexithymic)?

In conclusion, this study is informative, because it indicates that even individuals in normal college populations who have eating difficulties also have affective difficulties. Perhaps, these individuals use food to some extent to regulate affect just like individuals with clinical eating disorders are thought to do. In addition, this study paves the road for future research to answer more specific questions about the relationship between eating pathology and alexithymia as well as consider the implications that such findings have for doing successful psychotherapy with individuals who have difficulty with disordered eating and affect regulation.

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APPENDIX A

EXTENDED LITERATURE REVIEW: DESCRIPTION AND HISTORY
OF EATING DISORDERS

EXTENDED LITERATURE REVIEW: DESCRIPTION AND HISTORY OF EATING DISORDERS

This appendix provides a description and a historical account of anorexia nervosa, bulimia nervosa, and obesity.

Description of Eating Disorders

Three adult forms of eating disorders have been identified, described, and studied in the behavioral sciences: anorexia nervosa, bulimia nervosa, and obesity. Anorexia nervosa and bulimia nervosa are typically seen in young women, whereas obesity occurs throughout the lifespan for both men and women (Bray, 1987; Fairburn & Beglin, 1990). The symptoms and consequences of these three disorders are becoming increasingly familiar to researchers and clinicians.

Anorexic individuals engage in a relentless pursuit of thinness and lose substantial amounts of weight through strict dieting and strenuous exercise. Even though significantly and dangerously underweight, anorexic individuals have an intense fear of gaining weight or becoming fat. Anorexic individuals also have a disturbed body image; they experience their weight, body size, or body shape inaccurately, perceiving themselves as fatter than they actually are. When the anorexic individual has sustained significant weight loss for an extended amount of time, physical symptoms begin to appear: amenorrhea, bradycardia, edema, hypotension, hypothermia, and metabolic irregularities. Despite the emaciated appearance and development of physical symptoms,

anorexic individuals often do not acknowledge the serious medical implications of their weight loss. For approximately 10% of anorexic individuals, the disease results in death (Walsh, Gladis, & Roose, 1987). The DSM-III-R diagnostic criteria for anorexia nervosa are listed in Figure 1 (American Psychiatric Association, 1987).

Bulimic individuals engage in recurrent episodes of binge eating. During these episodes, bulimics feel unable to control their eating. Typically, bulimics binge-eat alone, and binge-eating episodes are usually terminated by abdominal pain, sleep, social interruption, or self-induced vomiting. In addition to employing self-induced vomiting to avoid weight gain, bulimics may also use laxatives, diuretics, strict dieting, fasting, or vigorous exercise to prevent weight gain. Like anorexics, bulimics have a persistent overconcern with body shape and weight, but unlike anorexics, bulimics usually do not lose significant amounts of weight. Most bulimics are either average weight or overweight, but have frequent weight fluctuations due to alternating binges and fasts. Often, individuals with anorexia are also bulimic. Physical consequences of binge eating and purging include: dental erosion, esophageal tears, gastric ruptures, dehydration, and electrolyte imbalance. Dehydration and electrolyte imbalance can cause cardiac arrhythmias, which occasionally result in sudden death due to heart attack. Diagnostic criteria for bulimia nervosa are listed in Figure 2 (American Psychiatric Association, 1987).

-
- A. Refusal to maintain body weight over a minimal normal weight for age and height, e.g., weight loss leading to maintenance of body weight 15% below that expected; or failure to make expected weight gain during period of growth, leading to body weight 15% below that expected.
 - B. Intense fear of gaining weight or becoming fat, even though underweight.
 - C. Disturbance in the way in which one's body weight, size, or shape is experienced, e.g., the person claims to "feel fat" even when emaciated, believes that one area of the body is "too fat" even when obviously underweight.
 - D. In females, absence of at least three consecutive menstrual cycles when otherwise expected to occur (primary or secondary amenorrhea). (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen, administration.)
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Figure 1. DSM-III-R Diagnostic Criteria for Anorexia Nervosa.

Reprinted with permission from the Diagnostic and Statistical Manual of Mental Disorders (3rd edition-revised; p. 67), American Psychiatric Association, 1987, Washington, D.C. Copyright 1987 by the American Psychiatric Association.

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- A. Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete period of time).
 - B. A feeling of lack of control over eating behavior during the eating binges.
 - C. The person regularly engages in either self-induced vomiting, use of laxatives or diuretics, strict dieting or fasting, or vigorous exercise in order to prevent weight gain.
 - D. A minimum average of two binge eating episodes a week for at least three months.
 - E. Persistent overconcern with body shape and weight.
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Figure 2. DSM-III-R Diagnostic Criteria for Bulimia Nervosa.

Reprinted with permission from the Diagnostic and Statistical Manual of Mental Disorders (3rd edition-revised; pp. 68-69), American Psychiatric Association, 1987, Washington, D.C. Copyright 1987 by the American Psychiatric Association.

Obesity, an energy balance disorder, is currently defined as an "excessive storage of energy in the form of fat" that has adverse effects on health and longevity (Simopoulos, 1987, p. 4). Generally, obese individuals can be identified by their appearance, like anorexic individuals. Although such an observation usually provides an accurate determination of obesity, it is not quantitative. Several quantitative methods have been designed to assess obesity (excess body fat): height and weight measurements, body mass index (weight/height squared), circumference measurements (waist-hips ratio), and skinfold measurements (Bray, 1987). Health problems associated with or exacerbated by obesity include: cardiovascular disease, hypertension, diabetes mellitus, and cancer (especially of the reproductive organs). In addition, overweight individuals tend to die sooner than average-weight individuals, especially those who are overweight at younger ages. For example, for individuals 10% over average weight, there is an 11% increase in mortality for men and a 7% increase in mortality for women. At 20% over the average weight, there is a 20% increase in mortality for men and a 10% increase in mortality for women (Bray, 1987). Simple obesity appears in the ICD-9-CM as a physical disorder and is diagnosed on Axis III in DSM-III-R.

Historical Development of Eating Disorders

Most contemporary accounts of the history of eating disorders, specifically anorexia and bulimia, focus on anorexia.

These reports suggest that bulimia is of recent origin. In these accounts, the concept of bulimia does not have a developmental history apart from beginning as a variant of anorexia nervosa (Casper, 1983; Gandour, 1984). In contrast, a recent account of the history of bulimia suggests that bulimia as a separate syndrome dates back at least as far as references to anorexia (Stein & Laakso, 1988).

Anorexia Nervosa

In 1694, Richard Morton gave one of the first medical descriptions of the anorexia nervosa syndrome. Morton's description of a 17-year-old female included symptoms of supposed loss of appetite, extreme weight loss, and amenorrhea. Morton labeled the condition "nervous consumption," and he recognized the importance of psychological mechanisms causing the individual's starvation. After Morton's graphic description of "nervous consumption," nearly two centuries elapsed before any other accounts of anorexia were written.

In the late 1800's, Sir William Gull, in England, and Charles Lasegue, in France, simultaneously published papers on anorexia (Gull, 1874; Lasegue, 1873). Lasegue used "anorexia hysterica" to label the syndrome he observed, and Gull coined the term "anorexia nervosa" that is currently used. The choice of anorexia nervosa, meaning nervous loss of appetite, is unfortunate, because it is now understood that anorexics do not experience a loss of appetite; instead, they deny hunger (Bruch, 1973). Despite the

unfortunate misnomer, many case reports were published in the 1880's and 1890's following the writings of Gull and Lasegue, and it was generally believed that anorexia had psychological causes (Casper, 1983).

In the early 1900's, Lawrence Simmonds, a pathologist in Hamburg, Germany, suggested that the emaciation observed in anorexic individuals could result from deficient pituitary functioning (Simmonds, 1914, 1916). Thus, many anorexic individuals at that time were diagnosed with "Simmonds disease" even though there was no evidence for pituitary malfunction. In addition, research and treatment at the time followed many futile physiological tracks.

In the 1940's, psychological factors again began to be recognized as important to anorexia nervosa (Casper, 1983). This change was not, however, reflected in the diagnostic classifications of the time. In 1952, the DSM-I considered anorexia a type of psychophysiological reaction, and in 1968, the DSM-II classified anorexia under special symptoms (i.e., feeding disturbance). The writing of Hilde Bruch in the 60's and 70's, which emphasized a drive toward thinness and the perceptual disturbances found in anorexic individuals, had a profound influence on the understanding of the psychological causes of anorexia (Bruch, 1962, 1965, 1973). This influence (e.g., disturbance of body image) can be seen in the third edition of the Diagnostic and Statistical Manual of Mental Disorders and its revision (American Psychiatric Association, 1980, 1987).

Bulimia Nervosa

In the medical literature of the 1700's, there are many references to bulimia that are distinct from accounts of anorexia (Stein & Laakso, 1988). One particularly detailed account appears in A Medicinal Dictionary (James, 1743). James distinguishes between two disorders, "boulimus" and "caninus appetitus." In both disorders, the sufferer engages in binge eating. The binge eating is terminated by vomiting for caninus appetitus and by fainting for boulimus. In addition, boulimus involves an intense preoccupation with food, and it is caused by acidic fluids in the stomach or excessively rapid digestion. Believing that boulimus had a physiological cause, James recommended physiological treatments. James acknowledges Galen's (A.D. 130-200) contribution to his ideas. Galen outlined the etiology of boulimus, "great hunger," as a digestive dysfunction. The primary symptom of the disorder was identified as a desire for food "at very short intervals."

In the 1800's, further attempts were made to understand the relationship of boulimie with other disorders. For example, Blachez (1869) suggested that boulimie could occur as a distinct syndrome or as a symptom of another disorder. When boulimie occurred as a distinct syndrome, Blachez believed that it was a nervous disorder that was not due to a medical condition. Blachez further suggested that boulimie should be distinguished from (a) insufficient food resources, (b) tapeworm, (c) recovery from typhoid, (d) adolescent appetite spurts, and (e) abdominal

difficulties. Finally, when boulimie alternated with anorexia, it should be labeled "fringale."

In the early 1900's when the thinking about anorexia had taken a physiological bent, there was an absence of writing about bulimia. Bulimia was not even mentioned in One Hundred Years of American Psychiatry 1844-1944 (American Psychiatric Association, 1944; Stein & Laakso, 1988). In 1944, however, the case study of "Ellen West" was published by Binswanger, and it undoubtedly provided the most extensive description, for that time period, of the syndrome of bulimia. The patient kept a detailed diary of her desperate struggle with bulimia, including the psychological pain involved in gaining control over her emotions by controlling her body. Descriptions of bulimic symptomatology also began to appear in Hilde Bruch's writing in 1962, but she considered bulimic symptoms to be a variant of anorexia. Finally, the authors of the DSM-III officially recognized bulimia as a syndrome distinct from anorexia in 1980.

Obesity

The history of the concept of obesity can be divided into two broad eras. In the first era, which consisted of the time period before the late 1800's, plumpness was a sign that the individual was in good condition and had the resources to eat heartily (Ayers, 1958). The words used to identify heavy people (i.e., corpulent, portly, and stout) were either neutral or carried a positive connotation (e.g., distinguished and dignified, strong

and brave). In the second era, which began during the 1800's and continues to the present, obese individuals were viewed as unhealthy, unfashionable, and psychologically maladjusted. In addition, the words used to identify heavy individuals (i.e., fat, obese, overweight) carry negative connotations.

The earliest writings characterizing the first era suggest that Greek and Roman civilizations were notorious for enormous feasts and banquets in which gluttony reached heights that have not been matched at any other time in history (Ayers, 1958). During the Medieval times, the Catholic church forbade gluttony, and famine was rampant, so few individuals were overweight. However, the art work of the times, which was characterized by jolly fat monks, suggested that being plump was still considered the ideal human form. The Renaissance was characterized by a renewed interest in food and eating as new foods were being brought to Europe from newly discovered lands. Diaries from the time describe huge feasts prepared for small groups of diners. In addition, the art of the time (e.g., Botticelli, Da Vinci) suggests that the society during the Renaissance did not idealize the slim look of the present century. In the eighteenth century, a similar attitude prevailed. Records of body weights of the customers of a wine merchant suggest that the individuals of the eighteenth century were not interested in being thin (Cobb, 1951).

Thus, before the 1800's, most individuals saw plumpness as a sign of wealth and prosperity. Some individuals during these times, however, were aware that being overweight was unhealthy.

For example, Hippocrates said, "Persons who are naturally very stout are more liable to sudden death than are thin persons" (cited in Ayers, 1958, p. 24). In addition, Nicole de la Chesnaye, physician to Louis XII, wrote a pamphlet pointing out the diseases that accompany excess weight (Mead, 1931). It was not until the late 1700's, however, that growing interest in the etiology and health risks of obesity began. In 1793, Thomas Bedoes advanced a theory to account for obesity from a physiologic point of view (Pennington, 1954). In 1827, Dr. William Wadd first presented his Comments on Corpulence (Wadd, 1827).

The beginning of the modern attitude toward obesity seems to be marked by a weight loss testimonial made to the public (Banting, 1864). In this testimonial, Banting defined obesity as a "parasite" and fatness as an "affliction," and weight reduction was acclaimed as bringing "comfort and happiness." Scientific advances after this testimonial supported Banting's experience that restricting food intake results in weight loss (Ayers, 1958). In addition, the first attempt was made by insurance companies to use statistics to correlate the relationship between overweight and mortality (Rogers, 1901). Thus, the early 1900's yielded widespread knowledge of obesity as a health problem.

In the 1920's, the role of women and ideas about fashion changed drastically. These changes led to the notion that obesity was not just unhealthy and incompatible with long life; obesity was also unfashionable (Ayers, 1958). The final trend toward the current attitude about obesity was the statement by Newburgh and

Johnston (1930) that obesity is not caused by abnormal metabolism; it is due to eating habits that are not adjusted to metabolic requirements. When individuals were still unable to lose weight with the knowledge that obesity was unhealthy, unfashionable, and controllable through diet, various branches in the social sciences (e.g., psychology, anthropology) suggested that overeating was a response to an unsatisfactory life situation or a personality disturbance (Weiner, 1952).

In conclusion, there has been a change in the last hundred years from admiring or ignoring obesity to idealizing thinness. Current attitudes toward obesity include: (a) obesity as a health problem, (b) obesity as unfashionable, and (c) obesity as a psychological problem. Current researchers continue to explore both the physiological and the psychological factors implicated in obesity (Schlundt, Hill, Sbrocco, Pope-Cordle, & Kasser, 1990).

APPENDIX B

EXTENDED LITERATURE REVIEW:

ETIOLOGY OF EATING DISORDERS

EXTENDED LITERATURE REVIEW:

ETIOLOGY OF EATING DISORDERS

This appendix is a summary of biological, sociocultural, family, psychodynamic, cognitive, and behavioral theories of eating disorders.

Biological Theories

Biological theories of etiology suggest that eating disorders result from physiological or biochemical abnormalities. Each disorder is explained by a different mechanism, but the hypothalamus, the part of the brain that regulates eating, is implicated in some way in each theory.

Anorexia Nervosa

Biological models of anorexia nervosa propose that there is a dysfunction in the hypothalamic-pituitary system and structures closely related to this system (i.e., thyroid, adrenals, and gonads). These models have been proposed, because many of the major symptoms of anorexia (e.g., eating disturbances, thermoregulatory disturbances, and menstrual disturbances) are disturbances of functions that are controlled by the hypothalamus and its associated structures (Wakeling, 1985). For example, anorexic individuals experience amenorrhea, which is controlled by the hypothalamus-pituitary-gonad system. They also have several symptoms that are indicators of hypothyroidism (i.e., constipation, cold intolerance, bradycardia, dry skin). Finally,

the activity of the hypothalamus-pituitary-adrenal axis appears to increase in anorexics. Biochemical activity in these systems has been studied to determine the exact mechanisms involved in the dysfunction. The action of norepinephrine, serotonin, and dopamine has been extensively studied (Halmi, 1981-82; Wakeling, 1985).

For these biological mechanisms to be proven as etiologically significant in the development of anorexia, the physiological changes would have to occur before weight loss. Published studies have reported that some anorexics do develop amenorrhea prior to significant weight loss (Wakeling, 1985). These studies, however, retrospectively identified the onset of weight loss and the onset of amenorrhea. Also, without significant weight loss, changes in diet and exercise may have actually predated the onset of amenorrhea, and these changes in diet and exercise may have produced amenorrhea. It has also been argued that persistence of amenorrhea after significant weight gain would be evidence for a primary hypothalamic dysfunction. Even though amenorrhea persists in some individuals after regaining 90% of their initial body weight, this is not conclusive evidence for a biological cause for anorexia. Individuals must have a specific fat-to-lean ratio in order to initiate menstruation (17%) and maintain menstruation (23%). High levels of exercise and maintenance of low-fat diets may keep body fat percentages below 23% (Wakeling, 1985). Thus,

the dysfunction in this system is believed to be related to weight loss and the behaviors associated with weight control.

Biological investigations of the hypothalamus-pituitary-thyroid axis indicate that release of thyroid-stimulating hormone from the pituitary is normal in anorexic individuals. However, the hypothalamus appears to be insensitive to the thyroid hormones (Wakeling, 1985). Thus, the hypothalamus does not recognize adequate levels of thyroid hormones and does not send a message to the pituitary to stop secreting thyroid-stimulating hormone. The pituitary continues to release the thyroid-stimulating hormone resulting in overactivity of the thyroid.

The activity of the hypothalamus-pituitary-adrenal axis appears to increase in anorexics. However, the absolute production rate of cortisol is actually normal; production seems elevated, because it is increased relative to body weight. In contrast to cortisol production, metabolism (i.e., breakdown) of cortisol is impaired. This finding has led to a link of anorexia with major depressive disorder. More information about this link will appear in the section of this document that discusses the affective variant hypothesis.

In conclusion, it is generally assumed that the dysfunctions occurring in the three hypothalamic systems (i.e., gonads, thyroid, adrenal) of anorexic individuals result from weight loss.

Obesity

The obesity literature is dominated by biological theories of etiology. An entire journal, International Journal of Obesity, has been devoted to reporting the results of investigations into the biological nature of obesity. In general, the biogenetic models of obesity propose that "body weight is the result of a neurophysiologically regulated system that defends a genetically determined set point" (Schlundt, Hill, Sbrocco, Pope-Cordle, & Kasser, 1990, p. 815). One "set point" model of obesity will be further explained later in this section. Evidence for genetic inheritance of relative body size, composition, and metabolic parameters presumed to be related to obesity has been reported. For example, adoption and twin studies have demonstrated the inheritance of body mass index (Stunkard, Foch, & Hrubec, 1986; Stunkard, Sorensen, Hanis, Teasdale, Chakraborty, Schull, & Schulsinger, 1986). In addition, data have been collected that indicate that body fat percentage, resting metabolic rate, thermic effect of food, and fat metabolism are at least partially inherited (Bouchard, 1987).

The most widely studied biogenetic model of obesity is Nisbett's (1972) "set point" model of obesity. Nisbett proposes that each person has a genetically determined, homeostatically defended ideal weight or "set point." This set point is determined by the number of fat cells in a person's body. The number of fat cells is dependent on genetic endowment and early

nutritional experience. Nisbett further suggests that obese individuals have higher than average set points (i.e., number of fat cells), and the hypothalamus functions to maintain these fat cells. Society's emphasis on slimness leads many overweight individuals to keep their body weight below their set points, which results in starvation by biological standards. This deprived state causes obese individuals to be more responsive to external cues for eating (e.g., sight, smell, or taste of food) and to engage in more eating when external cues are available. In support of his theory, Nisbett notes several parallels between obese people and starving people. Both groups are: (a) more taste responsive, (b) more emotional, and (c) less active than normal weight individuals.

Rodin, Slochower, and Fleming (1977) tested Nisbett's theory by measuring people's external responsiveness as they lost weight. Nisbett's theory would predict that greater deprivation would lead to higher levels of external responsiveness. In contrast, the study found that external responsiveness did not vary with weight loss. In addition, Nisbett's theory predicts that people become more emotional as they lose weight, but this has not been supported (e.g., Leon & Leon, 1983). Finally, researchers currently believe that the number of fat cells in a person's body can change in adulthood, and overeating at any age may lead to an increased number of fat cells and obesity (e.g., Kirtland & Gurr, 1979). Although Nisbett's theory has not been generally

supported, it has provided impetus for other theories of obesity (e.g., restraint theory is discussed under cognitive theories).

Bulimia Nervosa

Biological theories of bulimia propose that bulimia results from neurochemical abnormalities. Serotonin and norepinephrine are the neurotransmitters that have been implicated in the etiology of bulimia. While some of the evidence for this theory comes from studies of human beings, much of the evidence comes from animal models. In several animal models, manipulations that increase serotonin are known to reduce appetite (Wurtman, 1983). In studies of bulimic individuals, the level of a metabolite of serotonin (i.e., 5-hydroxyindoleacetic acid) in the cerebrospinal fluid is lower in bulimic individuals than in restricting anorexics (Kaye, Ebert, Gwirtsman, & Weiss, 1984). This finding suggests that decreased serotonin turnover may point to a disrupted satiety mechanism that predisposes an individual to the tendency to binge.

Abnormalities of norepinephrine metabolism are indirectly implicated in the etiology of bulimia. Norepinephrine binding to alpha-adrenergic receptors in the paraventricular nucleus of the hypothalamus powerfully induces an eating response in rats (Leibowitz, 1984). Further, administration of imipramine (i.e., an antidepressant) reduces binge eating in some bulimics (Pope, Hudson, Jonas, & Yurgelun-Todd, 1983). Although imipramine blocks the reuptake of serotonin, it has a more powerful effect in

blocking norepinephrine reuptake. Thus, there is a possible connection between uptake blockage and norepinephrine-induced eating that deserves further research.

Conclusions

In general, biological theories of eating disorders have not been well-supported empirically. The biological mechanisms proposed as causal factors in anorexia may actually result from the starvation that accompanies the disorder. The set-point model of obesity has not been supported, suggesting that mechanisms other than hypothalamic functioning and genetic endowment of fat cells must be responsible for obesity. Finally, the neurochemical mechanisms proposed for bulimia are based on animal models and have not been widely tested on bulimic individuals.

Sociocultural Theories

Sociocultural theories of anorexia and bulimia suggest that certain societal values are an important antecedent of the development of eating disorders (Schwartz, Thompson, & Johnson, 1982). The present society values thinness and physical fitness. Increasing numbers of women are pursuing the ideal by dieting and exercising. Statistics show, however, that many of these women are not coming close to the ideal when they employ traditional methods of weight control (Polivy & Herman, 1987; Simopoulos, 1987). These findings suggest that the present society is ripe for the use of drastic and unhealthy methods of weight control to strive for the often unattainable ideal. Sociocultural theories

cannot, however, fully explain why individuals develop eating disorders. If these theories completely explained the development of eating disorders, then any individual exposed to societal values would be affected. Some predisposing factor in the individual must interact with societal values to cause the disorder.

Family Theories

Family systems theorists believe that family relationships play a role in the predisposition toward anorexia. Minuchin (1974) suggested that the following maladaptive family patterns provide a framework for the development of anorexic and other forms of psychosomatic symptomatology: (a) enmeshment, (b) overprotectiveness, (c) rigidity, (d) conflict avoidance, and (e) conflict-detouring. In essence, the somatic symptoms of the anorexic individual are the expression of family dysfunction in the anorexic individual or the anorexic individual's attempted solution to the family dysfunction.

In a healthy family, parents provide an adequate balance of closeness (e.g., nurturance and support) and distance (e.g., encouragement and toleration of attempts at autonomy) at appropriate times in the child's development. Because of their own limitations, the parents of the potential anorexic fear their child's development and impending separation and cannot allow appropriate amounts of autonomy and independence. These parents are excessively concerned about their child's well-being. The

child learns to be dependent on her parents, letting them decide what she needs. She realizes that evaluation of her needs is her parents' role, and she strives for perfection to please them. The child's autonomy is not permitted to develop because it is viewed as betrayal instead of growth. When the child reaches adolescence, she feels dependent on her parents and fails to see herself as an independent person. At this time, an ordinary diet during a period of unusually intense stress gradually develops into anorexic symptomatology. The anorexic individual begins to view her symptoms as an important part of her identity and refuses to give them up. The parents struggle to overprotect their fragile daughter as she holds fast to the one form of autonomy that she possesses.

Research has been done to determine whether Minuchin's framework for anorexic and other psychosomatic families also holds for bulimic families. Schwartz, Barrett, and Saba (1985) reported that the characteristics found by Minuchin in anorexic families (i.e., enmeshment, overprotectiveness, rigidity, conflict avoidance, and conflict-detouring) were also present in most of the bulimic families they studied. These authors also found three other characteristics in bulimic families: (a) isolation, (b) consciousness of appearances, and (c) special meaning attached to food and eating.

Despite Schwartz and colleagues' (1985) finding that bulimic families share the same characteristics as anorexic families, a number of studies have failed to support the validity of family

theories for individuals with eating disorders. Harding and Lachenmeyer (1986) found no support for three variables associated with Minuchin's theory (i.e., overprotection, enmeshment, and rigidity) in a comparison between anorexics and non-anorexic controls. Gowers, Kadambari, and Crisp (1985) examined family patterns of individuals with anorexia nervosa and found no one family structure characteristically associated with anorexia nervosa. Palmer, Oppenheimer, and Marshall (1988) administered the Parental Bonding Instrument to groups of anorexics, bulimics, and general practice patients and found no support for hypotheses that suggest that patients with eating disorders have had a childhood characterized by any particular pattern of parental relationship. In a nonclinical college sample, Kent and Clopton (1988) found no significant differences between the reported family relationship patterns of bulimics and normal women. Suspecting that the nonsignificant findings may have resulted from the use of the overly inclusive DSM-III (American Psychiatric Association, 1980) diagnostic criteria for bulimia, an additional study was conducted that employed the more stringent DSM-III-R (American Psychiatric Association, 1987) diagnostic criteria. Kent and Clopton (1992) found that bulimic families differed from families of nonsymptomatic controls in some important ways (i.e., greater likelihood of father-daughter closeness and more weight and eating problems), but no support was found for the pathological family patterns that have been found in previous studies of bulimics in treatment.

In conclusion, support has not been found for family theories of eating disorders. Generally, the families of eating disordered individuals do not have the characteristic patterns identified by Minuchin (1974), and families of eating disordered individuals did not differ significantly from the families of controls.

Psychodynamic Theories

In general, psychoanalytic theorizing has undergone major changes since its inception with Freud in the early 1900's (Lerner, 1983). Freud emphasized identification of the instincts and their development. Later, emphasis moved to the functions of the ego (Hartmann, 1958). Currently, the focus is on the early mother-child dyad and its impact on later interpersonal relationships (Kernberg, 1976; Mahler, Pine, & Bergman, 1975). Psychoanalytic theories of eating disorders have paralleled this evolution in psychoanalytic thought.

Anorexia Nervosa

The early psychoanalytic theories of anorexia nervosa--the classical psychosexual or "id" theories--explain anorexia in terms of conflicting drives and defenses. Specifically, anorexic symptomatology is: (a) a defense against the developmental process of puberty; (b) a regression, to abandon the genital-sexual stage of development, in which sexual impulses vanish from consciousness; (c) a fixation at an oral level so that thought is dominated by food and hunger; and (d) a striving toward an austere ideal and an asexual life (Scott, 1987). According to

classical analysts, the loss of appetite equals a loss of libido. Eating is the "sexual activity" of the oral stage and is, therefore, avoided.

The second wave of psychoanalytic thought was dominated by the role of ego functions: (a) ego weakness, (b) perceptual distortions, and (c) interpersonal disturbance. In one of the first ego theories of anorexia nervosa, Bruch (1973) emphasized interpersonal factors (i.e., parents controlling a child or inhibiting a child's autonomy) leading to ego weakness (i.e., never forming a self-respecting identity). Bruch suggests that the three major disturbances resulting from these interpersonal factors are (a) the inability to accurately perceive and assess one's body image, (b) difficulty perceiving and labeling internal body sensations, and (c) a sense of personal ineffectiveness or helplessness. Anorexia, then, is "an attempt to secure a sense of self-identity or personal control. This is accomplished in part by establishing a 'mastery' over the body" (Harding & Lachenmeyer, 1986, p. 440).

The third wave of psychoanalytic thought emphasized the early mother-child dyad and its crucial impact on ego development and object relations. In their developmental object relations model, Mahler, Pine, and Bergman (1975) suggested that anorexics are arrested in development at the symbiotic phase or the separation-individuation phase. Thus, there are symbiotic-like attachments between anorexics and their mothers and incompleteness of the separation-individuation process. An individual who

successfully completes these stages emerges with a clear sense of differentiation between self and mother, a strong sense of individual identity. Anorexics fail to develop this sense of independent identity. Further, anorexics have difficulty establishing transitional objects. This is especially detrimental, because effective manipulation of transitional objects (i.e., an inanimate object such as a doll, teddy bear or blanket) during development leads to a sense of control or mastery, which is lacking in anorexics. Anorexic individuals try to compensate for this deficit by controlling their eating.

Obesity

As with psychodynamic theories of anorexia, psychodynamic theories of obesity can be subdivided into id theories and ego theories. According to the classical id theories, obese individuals are frustrated in their ability to meet their adult responsibilities. In reaction to their frustration, they return to an earlier mode of functioning (i.e., orality) to fill the void in their adult life (Freud, 1920). Freud suggests that the regression to a more immature level of functioning allows the obese individual to avoid facing adult frustrations, and it also offers a substitute form of need gratification (i.e., eating). Thus, the ingestion of food becomes the best available form of pleasure. In addition, the excess weight often allows obese individuals to avoid adult sexuality.

According to ego theories of obesity, mothers of obese children are typically oversolicitous with their children in order to hide their true feelings of rejection and resentment (Bruch, 1947, 1953). These mothers provide an abundance of material goods, including food, to compensate for their failure to meet the child's emotional needs. Thus, for the obese individual, food becomes a substitute for the love that the mother was unable to give. Whenever the obese individual desires acceptance and love from others and does not receive them, this individual uses food to compensate for the absence.

Bulimia Nervosa

The development of psychoanalytic thinking has also influenced the theoretical and research literature on bulimia. Bulimia has recently been recognized as a disorder so, psychodynamic considerations of bulimia have had a tendency to be shaped by the currently popular object relations movement. Object relations theories are actually a family of distinct theories in the same way that learning theories are a family of distinct theories. In general, object relations theories attempt to explain how unhealthy adult relationships are rooted in unhealthy interactions between mothers and infants or young children.

Most object relations theories of bulimia are based on the ideas of Winnicott (1971). Winnicott suggested that "good enough" mothering (i.e., primary empathy and mirroring) results in healthy development. Primary empathy is the mother's ability to perceive

the child's needs. Mirroring is an accurate reflection of the child's needs back to the child and approval of the child's needs. When a mother accurately mirrors the child's needs, the child has contact with his or her own feelings and does not have to deal yet with the differences of others. Winnicott proposes that this interaction gives the child a sense of strength and provides a core around which a sense of self develops.

According to Sugarman and Kurash (1982), a failure in primary maternal empathy results in a developmental arrest at the sensorimotor level. Thus, when the mother is absent, the individual is not able to evoke a mental representation of the mother. To cope, the individual evokes an image of the mother as a part of a need-satisfying sequence of behaviors. For a bulimic to evoke an image of the mother, she must binge. During the binge, the bulimic individual is able to act out a symbiotic merger with the mother. Sugarman and Kurash (1982) suggest that this process arouses fears of fusion with the mother. Because of a developmental arrest at the sensorimotor level, performing a concrete behavior is the only way to reject a symbiotic union with the mother. The bulimic, thus, rejects the mother by purging. "Food is not the issue; rather it is the bodily action of eating which is essential in regaining a fleeting experience of mother. The dread of fusion...often lead(s) to vomiting, another bodily action" (Sugarman & Kurash, 1982, p. 61).

For Swift and Letven (1984), failure in parental mirroring of strength and tranquility leads to bulimic symptomatology. The

child does not have the opportunity to merge with a calm, omnipotent other, and the child is overwhelmed by unbridled emotionality. Thus, these persons develop a weakness in ego structure that predisposes them to "intolerably high levels of internal tension that seriously enfeebls their sense of self" (Swift & Letven, 1984, p. 489) when they are exposed to high levels of stress. According to Swift and Letven (1984), binge eating and vomiting are symbolic exaggerations of two interpersonal styles (i.e., clinging dependency and self-reliant distancing) that serve as ways to cope with disillusionment in relating to others. Clinging dependency (i.e., symbolically represented by binge eating) lessens the threat of separation and emptiness; self-reliant distancing alleviates fears of engulfment and loss of independence (i.e., symbolically represented by purging).

Farmer (1991) empirically tested some of the object relations ideas about bulimia. Thirteen bulimics and 13 matched controls were administered the MMPI and the Rorschach. The bulimic individuals' test protocols differed significantly from protocols of the control subjects. The average of the nonbulimic individuals' MMPI protocols was within normal limits. The average of the bulimic individuals' MMPI protocols was a 4-8 codetype suggesting that these individuals show marginal interpersonal functioning and could possibly be diagnosed with one of the cluster B personality disorders (i.e., antisocial, borderline, histrionic, narcissistic). Elevated scale 7 scores suggest that

"ritualistic behaviors might serve as the psychological glue preventing an already fragile self-representation from crumbling into even more disarray" (Farmer, 1991, p. 273). On the Rorschach, bulimics had significantly more unusual or deviant human movement (i.e., Mu/-) responses suggesting that there is serious cognitive dysfunction like that found with severe ego dysfunction. Finally, bulimics gave more responses indicative of developmentally primitive ideations (i.e., percepts of viscera and fabulized combinations). These types of responses tend to be found with Mahler's differentiation subphase of development providing support for bulimic's developmental arrest (Mahler, Pine, & Bergman, 1975).

Conclusions

In general, psychoanalytic theories of eating disorders propose that difficulties in early life result in the symptoms associated with eating disorders in later life. While classical theories present these difficulties in terms of instinctual gratification, ego theories and objects relations theories propose that early difficulties in interpersonal relationships between children and parents result in eating pathology. Many of the ideas in psychodynamic theories are difficult to operationalize, so little research has been done to empirically test psychodynamic ideas. The research that has been conducted appears to support some of the psychodynamic concepts, but this research is far from providing comprehensive examinations of psychodynamic theories.

Cognitive Theories

According to Herman and Polivy's (1980) restraint theory, eating is influenced by physiological factors prompting the desire for food and by cognitive efforts to resist that desire (i.e., restraint). Individuals vary in the degree to which they exercise restraint. Highly restrained eaters constantly worry about what they eat and struggle to resist food. Unrestrained eaters, on the other hand, eat freely. Two hypotheses are related to the restraint theory. The "disinhibition hypothesis" suggests that the self-control of restrained eaters may be temporarily weakened by cognitive factors (e.g., thoughts that a dietary violation has ruined the entire day), emotional factors (e.g., dysphoric or anxious mood), or pharmacological factors (e.g., consumption of alcohol). When disinhibition occurs, restrained eaters' biological need for food dominates, and they eat large quantities of food. The second hypothesis, the obesity and restraint hypothesis, proposes that differences in level of restraint underlie differences in the eating behaviors of obese and normal individuals. Specifically, obese individuals are expected to exercise more restraint than normal weight individuals. Thus, when obese individuals exceed their level of restraint, they tend to overeat.

Herman and Polivy (1984) have further extended their theory of restraint by placing it within a "boundary model." They suggest that biological pressures (i.e., hunger and satiety) work to keep consumption within optimal boundaries (see Figure 3).

Figure 3. Boundary Model of Overeating.

Psychological factors have the greatest influence on eating when an individual is within the optimal boundaries (i.e., not hungry and not full). It is in this optimal zone (shown between the solid vertical lines in Figure 3) that individuals can set self-imposed boundaries, diet boundaries, lower than their satiety boundary (shown as broken vertical lines in Figure 3). Herman and Polivy suggest that this phenomenon occurs with dieters (i.e., restrained eaters), binge eaters, and anorexics. Anorexics, who rarely exceed the diet boundary, have their diet boundary set the lowest (i.e., closest to the hunger boundary). When dieters exceed the diet boundary, they eat until they are sated. When binge eaters exceed the diet boundary, they go beyond the satiety limit, and eat until they reach their physical capacity. Ruderman (1986) points out that the boundary model accurately describes eating pathology, but it does not explain what causes eating pathology.

Numerous studies have been conducted to test the various hypotheses of Herman and Polivy's (1980, 1984) restraint theory and boundary model. Support has been found for the disinhibiting effects of cognitions. In a number of studies, restrained eaters and unrestrained eaters were randomly assigned to either a preload condition (i.e., drink a milkshake) or a no preload condition (i.e., nothing is eaten). After the manipulation, subjects were asked to taste ice cream. Consistently, restrained eaters with a preload ate more ice cream than restrained eaters without a preload, and unrestrained eaters with a preload ate less ice cream

than unrestrained eaters without a preload (e.g., Herman & Mack, 1975). These results suggest that the restrained eaters were not guided by physical feelings of satiety; they seemed to believe that they had already failed to maintain their diet, so they ate more. The studies examining the disinhibiting effects of alcohol on restrained eaters are mixed suggesting that further research needs to be done in this area (Polivy & Herman, 1976b, Polivy & Herman, 1976c).

Herman and Polivy's (1984) hypothesis that strong emotions make demands on restrained eater's energy resources and temporarily decrease their motivation to diet has received support. These studies have either compared clinically depressed restrained and unrestrained eaters or induced dysphoric mood in restrained and unrestrained eaters. In a study of clinically depressed individuals, unrestrained eaters reported significant weight loss and restrained eaters reported significant weight gain with the onset of depression (Polivy & Herman, 1976a). In mood induction studies, restrained eaters in dysphoric mood conditions ate significantly more than restrained eaters in nondysphoric conditions (Baucom & Aiken, 1981; Frost, Goolkasian, Ely, & Blanchard, 1982; Ruderman, 1985). While these results appear to support Herman and Polivy's (1984) hypothesis, it is also possible that negative mood states may lead restrained eaters to eat in an attempt to seek solace and distraction from their pain.

While the disinhibition hypothesis of Herman and Polivy's (1980) model has received support, the obesity and restraint

hypothesis (i.e., that obese individuals show higher levels of restraint than normal weight people) has not received support (Ruderman, 1986). One study directly examined the relationships among weight, restraint, and preloads (Ruderman & Christensen, 1983). In this study, unrestrained eaters ate significantly less after a preload than without a preload, whereas restrained eaters ate slightly more after the preload than without it. Contrary to the obesity and restraint hypothesis, however, obese subjects ate significantly less after the preload than without it, whereas normal weight people ate similar amounts with and without the preload. This study replicates previous studies that did not find support for the obesity and restraint hypothesis (Hibbscher & Herman, 1977; Ruderman & Wilson, 1979; Spencer & Fremouw, 1979).

In conclusion, support has been found for the disinhibition hypothesis of Herman and Polivy's (1984) theory. Specifically, dysphoric mood and beliefs about failing to maintain a diet have been found to increase eating in restrained eaters. Support has not been found, however, for the obesity and restraint hypothesis.

Behavioral Theories

The anxiety reduction model has been advanced to explain both obesity and bulimia (Kaplan & Kaplan, 1957; Rosen & Leitenberg, 1982, 1985). The theory takes slightly different forms for the two types of eating disorders.

Obesity

Kaplan and Kaplan (1957) first proposed the anxiety reduction model for obese individuals. After an extensive review of the biological literature on obesity, they concluded that "in at least 97% of the cases of obesity, the excessive accumulation of adipose tissue is clearly due to overeating; these 'exogenous' cases result from an excessive caloric intake over energy output" (Kaplan & Kaplan, 1957, p. 189). If a biological deficit could not account for the majority of cases of obesity, some other factor must exert an influence. Kaplan and Kaplan (1957) suggested that overeating was a learned behavior that reduced anxiety. Obese individuals did not seem to overeat when they were hungry. The uncontrollable, compulsive type of overeating seemed to be more accurately explained in drive reduction terms. Thus, Kaplan and Kaplan (1957) suggested that individuals learned that eating diminished anxiety, so the act of eating was reinforced by the reduction of anxiety. However, eating had two consequences: immediate anxiety reduction and the accumulation of excess fat tissue over time. The delayed consequence of overeating (i.e., weight gain) merely increased anxiety and led to more overeating to reduce the anxiety of being overweight. Thus, eating reduces the anxiety caused by any emotional conflict, but a self-defeating pattern that is difficult to extinguish is set up.

A recent review of the literature on obesity and emotions suggested that Kaplan and Kaplan's (1957) anxiety reduction model is too simplistic (Ganley, 1989). More specifically, the studies

reviewed suggested that there were differences in the type of emotion preceding eating; eating was not exclusively preceded by anxiety.

Bulimia Nervosa

Rosen and Leitenberg (1982, 1985) have proposed an anxiety-reduction model for the maintenance of bulimia. They propose that "bulimia nervosa may be analogous to obsessive-compulsive disorders, with purging fulfilling an anxiety-reducing function similar to that of compulsive handwashing and checking rituals" (Steere & Cooper, 1988, p. 386). Thus, vomiting rather than binge eating may be the impetus that maintains this disorder. Because bulimic individuals have excessive concern about body weight and shape, eating produces anxiety, and binge eating produces high levels of anxiety. Rosen and Leitenberg (1982, 1985) suggest that vomiting relieves anxiety by allowing the bulimic individual to get rid of ingested food. After an individual discovers vomiting, binge eating gradually becomes more frequent; the positive effects of binge eating can be obtained without the consequent physical and psychological suffering. Thus, a cycle is established in which overeating is followed by anxiety and a purge to reduce anxiety.

According to Rosen and Leitenberg's theory (1982, 1985), binge eating episodes would decrease if the anxiety-reducing response of vomiting were eliminated. Steere and Cooper (1988) have reported several case studies suggesting that binge eating

continues even after vomiting has ceased. For example, one bulimic individual binge ate on 65 occasions in one month and vomited only once. Thus, there are certainly instances in which the anxiety-reduction model of bulimia does not apply.

Affective Variant Hypothesis

The affective variant hypothesis of eating disorders states that eating disorders are a form of depression with the same biological basis as mood disorders. According to this hypothesis, pathological eating behaviors are symptoms of depression. Several arguments have been made in support of this hypothesis, but three recent reviews of the literature in this area suggest that it is premature to conclude that eating disorders are simply variants of depression (Hinz & Williamson, 1987; Strober & Katz, 1987; Walsh, Gladis, & Roose, 1987).

Prevalence of Mood Disorders

The first area of literature supporting the affective variant hypothesis is the prevalence literature on mood disorders in eating disordered women. Both questionnaire and interview formats have been used to determine the prevalence of mood disorders in women with eating disorders. Studies suggest that from 27 to 75% of eating disordered women are depressed at some time in their lives (e.g., Herzog, 1984; Hudson, Pope, Jonas, Yurgelun-Todd, 1983; Piran, Kennedy, Garfinkel, & Owens, 1985; Walsh, Roose, Glassman, Gladis, Sadik, 1985). Hinz and Williamson (1987) criticize a number of the descriptive studies on methodological

grounds (i.e., use of unreliable and invalid instruments, nonblind interviewing, failure to use control or comparison groups).

Of the structured interview studies, only Cooper and Fairburn (1986) directly compared bulimic individuals and depressed individuals. These authors administered the Present State Examination and the Montgomery and Asberg Depression Rating Scale (Montgomery & Asberg, 1979; Wing, Cooper, & Sartorius, 1974). They carried out a discriminant function analysis of the symptom ratings and found a bimodal distribution, suggesting little similarity in the phenomenology of the two groups. Bulimic individuals were more obsessive and anxious than depressed individuals. Their depressive symptoms were less severe and tended to be highly reactive, unstable, and short-lived; the depressive symptoms were closely connected temporally with binge and purge episodes. Thus, individuals with eating disorders may also have depressive disorders, but there is little similarity in the phenomenology of the two types of pathology.

Biological Similarities

The second line of research that has been examined to determine the validity of the affective variant hypothesis is the literature on biological similarities between eating disordered individuals and depressed individuals. This area of research includes the study of adrenal activity and sleep. Individuals with major depressive disorders exhibit increased adrenal activity and sleep abnormalities (i.e., shortened REM latency, increased

REM density, and reduced slow wave sleep). If individuals with eating disorders exhibit these same characteristics, there is some support for the affective variant hypothesis.

Anorexic patients have elevated levels of plasma cortisol and inadequate cortisol suppression similar to patients with depressive disorders (Walsh, Katz, Levin, Kream, Fukushima, Hellman, Weiner, Zumoff, 1978). Interpretation of this finding, however, is not straightforward for several reasons. Hinz and Williamson (1987) suggest that there is some controversy over using the dexamethasone suppression test as a diagnostic test for depression, because many psychiatric patients without depressive diagnoses exhibit this phenomena. In addition, patients with other forms of malnutrition experience the same abnormalities, and the abnormalities in anorexic patients correct rapidly with small amounts of weight gain (Doerr, Fichter, Pirke, & Lund, 1980; Walsh, Katz, Levin, Kream, Fukushima, Hellman, Weiner, & Zumoff, 1978; Walsh, Katz, Levin, Kream, Fukushima, Weiner, & Zumoff, 1981). The most recent studies of measures of adrenal function in normal weight bulimic individuals do not appear to demonstrate increased adrenal activity (Gold, Gwirtsman, Avgerinos, Nieman, Gallucci, Kaye, Jimerson, Ebert, Rittmaster, Loriaux, & Chrousos, 1986; Walsh, Roose, Katz, Dyrenfurth, Wright, Vande Wiele, & Glassman, 1987).

In the sleep research, the EEG patterns of anorexic patients were not similar to the patterns observed in depressed individuals, and the EEG patterns of normal weight bulimics were

similar to the control subjects (Hudson, Jonas, Pope, & Grochochinski, 1985; Levy, Dixon, & Schmidt, 1986; Walsh, Goetz, Roose, Fingerioth, & Glassman, 1985). Together, the results from the studies of adrenal function and sleep abnormalities suggest that there is not a strong biological similarity between eating disorders and major depressive disorders.

Family History of Mood Disorder

The third line of research to examine the affective variant hypothesis looks at family history of mood disorder. Depressive illness tends to run in families; if depressive illness was present in the family history of eating disordered individuals, strong evidence for the affective variant hypothesis would exist. A number of studies found a positive family history of depression for bulimic individuals (Hudson, Laffer, & Pope, 1982; Hudson, Pope, Jonas, & Yurgelun-Todd, 1983; Lee, Rush, & Mitchell, 1985). None of these studies, however, used a control group of nonbulimic women and their families, so a bias toward diagnosing depressive disorders in family members may have been present. One study used an appropriate control group (Stern, Dixon, Nemzer, Lake, Sansone, Smeltzer, Lantz, & Schrier, 1984). In addition, the interviewers in this study were unaware of the identities of the bulimic mothers and the control mothers when they collected psychiatric history. Personal history of affective disorder was greater for the bulimic women than for the control women, but the difference was not statistically significant. Thus, the only well-controlled

study of family history of depression in bulimic women failed to find significant results.

All studies of the family history of depression in anorexic individuals examined for this review have found an increased frequency of depression in anorexic individuals' families (Cantwell, Sturzenberger, Burroughs, Salkin, & Green, 1977; Gershon, Schreiber, Hamovit, Dibble, Kaye, Nurnberger, Andersen, & Ebert, 1984; Hudson, Pope, Jonas, & Yurgelin-Todd, 1983; Piran, Kennedy, Garfinkel, & Owens, 1985; Rivinus, Biederman, Herzog, Kemper, Harper, Harmatz, & Houseworth, 1984; Winokur, March, & Mendels, 1980). In their review of studies examining the affective variant hypothesis, Walsh, Gladis, and Roose (1987) suggest that this is one of the most impressive collections of evidence for an association between anorexia and depression. They caution, however, that some additional considerations need to be entered into the interpretation of these findings. First, many anorexics have mood disorders, so finding an increased frequency of mood disorder in their families may just reflect that mood disorders run in families. In addition, there are no reports of higher incidence of anorexia in families with mood disorders, which would be expected if anorexia was a form of depressive illness.

A recent, controlled study of individuals with anorexia, individuals with mood disorders, and individuals with other types of psychiatric disturbance supported the ideas of Walsh and colleagues (Strober, Lampert, Morrell, Burroughs, & Jacobs, 1990).

In this study, anorexia nervosa was found to cluster in families. In addition, there was intergenerational transmission of anorexia nervosa, and anorexia nervosa was absent among relatives of controls. The absence of eating disorders in relatives of individuals with unipolar and bipolar mood disorders suggests a specificity of risk and an absence of a shared family liability. Consistent with previous studies, this study found an excess of mood disorders, mainly depression, among relatives of anorexic individuals. However, the increased risk was accounted for largely by the subset of anorexic individuals with a coexisting mood disorder, suggesting that these individuals transmit two disorders to relatives.

Treatment with Antidepressants

The final line of evidence for the affective variant hypothesis is successful treatment of eating disordered individuals with antidepressant medications, such as tricyclics and MAO inhibitors. The earliest findings of successful treatment of eating disordered individuals occurred in the late 1970's. Moore (1977) treated a nondepressed anorexic client with amitriptyline, because he was aware that this drug was associated with weight gain. Rich (1978) administered antidepressant medication to a bulimic individual who also required treatment for a recurrent depressive disorder. In both of these case studies, a side effect of the medication seemed to be a reduction in the amount of binge eating.

In response to the findings of the late 1970's, a number of studies specifically examined the use of antidepressants with eating disordered individuals. Pope and Hudson (1982) treated eight bulimics, five of whom were also given depressive diagnoses, with imipramine. Six of the eight bulimics showed moderate or marked reduction in binge eating, and retained the gains at 2-7 month followups while continuing antidepressant treatment. A moderate response, which was shown by three individuals, represented at least a 50% reduction in binge eating; a marked response, achieved by the other three treatment responders, was a 90% reduction in binge eating or complete abstinence from eating binges. Walsh, Stewart, Wright, Harrison, Roose, and Glassman (1982) administered the monoamine oxidase inhibitor, phenelzine, to six bulimic women who showed quick improvement in mood and eating symptoms.

The early, uncontrolled studies paved the way for larger, controlled studies. Pope, Hudson, Jonas, and Yurgelun-Todd (1983) randomly assigned 22 bulimic subjects to imipramine and placebo control groups for a 6-week treatment period. The imipramine group reported a 70% reduction in binge eating, whereas the control group reported no reduction in binge eating. In addition, the imipramine group showed a 50% reduction in Hamilton Depression Rating Scale scores. Follow-ups 1 to 8 months later demonstrated further improvement with continued antidepressant treatment for 18 of the 20 subjects. Pope and colleagues stated that the effectiveness of imipramine must be due to its antidepressant

effects since other studies using different classes of antidepressants achieve similar results. Another placebo control, double-blind study carried out at the same time as the Pope et al. (1983) study, found no significant difference in reported mood or binge frequency between a group treated by mianserin and a placebo control group (Sabine, Yonace, Farrington, Barratt, & Wakeling, 1983). This finding calls into question the broad generalization made by Pope et al. (1983).

Two studies suggest that antidepressants have an anti-binging effect that is separate from the mood elevating effect. In an uncontrolled investigation of 22 bulimics who were either depressed or failed at other therapies, Brotman, Herzog, and Woods (1984) found that 13 (59%) of their patients demonstrated a 50% reduction in binge eating. At the 3-month follow-up, only 5 (27%) maintained the treatment gains. In the other controlled, double-blind study, 22 nondepressed, bulimic outpatients were treated with desipramine hydrochloride or a placebo (Hughes, Wells, Cunningham, & Ilstrup, 1986). The treatment group demonstrated a 91% decrease in binge eating, whereas the placebo group had a 19% increase in binge eating. When the placebo group was switched to treatment with desipramine, they demonstrated an 84% decrease in binge eating.

Although a vast majority of bulimic individuals have improved mood and reduced binge eating when treated with antidepressants, suggesting a link between depression and eating disorders, it cannot be concluded that eating disorders are an affective variant

based on these findings. Such a conclusion would warrant calling cardiac arrhythmias affective variants, because cardiac arrhythmias improve with antidepressant treatment.

Conclusions

Although many individuals with eating disorders have significant mood disturbances, the evidence does not currently suggest that eating disorders are affective variants. The biological disturbances of depressed individuals (i.e., adrenal and sleep irregularities) do not occur frequently in normal weight bulimics, and anorexic individuals' cortisol irregularities are probably due to the effects of starvation. The only well-controlled study of family history of depression in bulimics failed to find significant results. Studies of family history of depression in anorexic individuals consistently find significant results, but these findings may merely be due to a concurrent mood disorder in the family of anorexics because there is not an increase in the prevalence of anorexia in mood disordered families. Finally, although improvements in mood and binge eating have occurred with the use of antidepressant treatment, it cannot be concluded that eating disorders are affective variants. Other disturbances (e.g., cardiac arrhythmias) are effectively treated with antidepressants, but those disturbances are not necessarily considered forms of depression.

Because the affective variant hypothesis does not have adequate empirical support, an alternative conceptualization can

be considered. Eating disorders are distinct diagnostic categories, and these disorders have psychopathological processes different from those of other mental disorders. In addition, eating disorders are often accompanied by depression; neither the eating disorder nor the depression should be denied importance in terms of case conceptualization or treatment planning.

Etiological Conclusions

There are a number of important implications of this review of theories of etiology. In general, there is insufficient support for biological theories, sociocultural theories, and family theories of eating disorders. There are also studies that fail to support the affective variant hypothesis. Psychodynamic theories of eating disorders have been difficult to operationalize, so they have rarely been tested empirically. The anxiety-reduction theories have been shown to be too narrow; emotions other than anxiety have been shown to precede eating. Finally, empirical support has been shown for the restraint theory; cognitions and emotions, especially dysphoric emotions, can disinhibit restrained eaters and lead to overeating. Thus, empirical evidence is mounting for theories of eating disorders that suggest that emotions may play a part in eating pathology. In addition, there is a growing body of empirical literature suggesting that pathological eating behaviors are attempts to cope with mood disturbances (i.e., individuals gain emotional control by misusing food).

APPENDIX C

EXTENDED LITERATURE REVIEW: EMPIRICAL STUDIES
OF EATING DISORDERS

EXTENDED LITERATURE REVIEW: EMPIRICAL STUDIES OF EATING DISORDERS

This appendix is a summary of the research literature examining the relationship between emotions and the three types of disordered eating (i.e., anorexia, bulimia, and obesity). In addition, this appendix reports the prevalence of disordered eating and clinical eating disorders.

Emotions and Eating

Empirical studies have found an influence of emotional state on eating and an influence of eating on emotional state. These relationships have been found most clearly among bulimic and obese individuals, and the relationship between emotions and eating in anorexia has rarely been studied.

Obesity

Of the three eating disorders, the literature on obesity and emotions spans the longest amount of time and is the most extensive. Two reviews of obesity and emotion have been written (Ganley, 1989; Kaplan & Kaplan, 1957). The first review, which summarized the literature written before 1957, concluded that obesity most often had a psychological etiology (Kaplan & Kaplan, 1957). Kaplan and Kaplan (1957) proposed that overeating by obese individuals reduces anxiety, and that this anxiety-reduction mechanism is responsible for the development and maintenance of obesity.

The second review of obesity summarized the research literature from 1957 to 1989 (Ganley, 1989). Ganley's review led to the conclusion that the anxiety reduction model proposed by Kaplan and Kaplan was too simplistic to explain the results of the studies he reviewed. Ganley suggested that four other factors needed to be considered to explain the relationship between obesity and emotions: (a) individual differences in food choice, (b) individual differences in type of emotion preceding eating, (c) secrecy surrounding eating, and (d) episodic quality of levels of emotional stress leading to eating. When these four factors are considered, it appears that in certain emotional situations obese individuals eat more than normal-weight individuals. The eating in these situations appears to have an affect-reducing effect, especially for negative emotions (e.g., anger, loneliness, boredom, and depression).

Research studies on obesity and emotions can be divided into three sections based on subject population: (a) massively to morbidly obese subjects (more than 75% overweight) in weight-loss treatment, (b) mild to severely obese subjects (15% to 75% overweight) in weight-loss treatment, and (c) obese subjects not in weight-loss programs.

Massively to Morbidly Obese

Studies have been done with massively to morbidly obese women who undergo surgical treatment for obesity. Most women interviewed before surgery reported a tendency to overeat when

depressed, lonely, or bored (Castelnuovo-Tedesco & Schiebel, 1975). The authors concluded that food was a readily available and reliable source of support, comfort, satisfaction, and consolation. Hockley (1979) studied women after surgery for obesity who reported difficulties in interpersonal situations and overeating in an attempt to feel better. Rosen and Aniskiewicz (1983) compared a surgical and a dietary treatment group. "Seventy-one percent of the bypass patients and 93% of the non-bypass patients were identified as reactive eaters (i.e., excessive eating in reaction to emotional or environmental cues)" (Rosen & Aniskiewicz, 1983, p. 55).

Other studies of massively to morbidly obese individuals examined individuals in "starvation" treatment programs. These individuals reported: (a) night eating; (b) binge eating; (c) eating when depressed, helpless, hopeless, or bored; (d) eating when temporarily or permanently separated from an important person; and (e) eating triggered by emotional arousal, including stress at work and in personal relationships (Atkinson & Ringuette, 1967; Fink, Gottesfeld, & Glickman, 1962; Kollar, Atkinson, & Albin, 1968; Rotmann & Becker, 1970). In the reviewed studies, 60-90% of massively to morbidly obese persons in treatment engaged in episodic emotional eating that was associated with negative emotions or stressful life events. In addition, there were no differences in individuals across socioeconomic group or gender (Ganley, 1989). These early studies relied solely

on self-reports, and no control groups were used. Later studies gradually became more methodologically sound.

Mildly to Severely Obese

The second group of studies examined mildly to severely obese individuals in treatment. Hoiberg, Berard, and Watten (1980) found significant correlations between body mass indices and scores on an emotional eating questionnaire in subjects recruited from the U.S. Navy. Hudson and Williams (1981) compared obese individuals to normal-weight controls, and obese individuals more frequently associated anger, hostility, boredom, and depression with eating. These results replicate the findings of earlier studies that found differences between obese and normal-weight individuals in emotional eating (Leon, 1975; Leon & Chamberlain, 1973a, b; Stunkard, 1959a, b).

Four studies examined binge eating in mildly to severely obese individuals in treatment. Depending on the definition of severity levels in the studies, estimates for severe binge eating ranged from 23% to 52% of subjects. Estimates for moderate levels of binge eating ranged from 20% to 55% of subjects, and estimates for little or no binge eating ranged from 18% to 27% of subjects (Gormally, Black, Daston, & Rardin, 1982; Keefe, Wyshograd, Weinberger, & Agras, 1984; Loro & Orleans, 1981; Marcus, Wing, & Lamparski, 1985). In addition, Marcus et al. (1985) and Loro and Orleans (1981) found that emotions influence binge eating. Together, these studies suggest that binge eating is highly

prevalent in obese groups, and emotions may influence binge eating. The findings of the studies of mildly to severely obese individuals in treatment are consistent with the studies of massively to morbidly obese individuals in treatment; emotional eating is found in about 75% of mildly to severely obese individuals in treatment at all socioeconomic levels, and emotional eating is often precipitated by negative emotions.

Untreated Obese Individuals

The third portion of studies examines obese individuals who are not in weight-loss treatment programs. In a study of upper-middle-class obese individuals, eating was associated with depression, repressed anger, anxiety, and repressed sexuality for 95-100% of the obese subjects and for less than 10% of the normal-weight subjects (Woodman, 1980). For Woodman's subjects, emotional eating was reported to increase primarily with negative emotions and to decrease with positive emotions. A series of publications described a comparison of obese and normal-weight individuals in psychotherapy (Glucksman, Rand, & Stunkard, 1978; Rand, 1982; Rand & Stunkard, 1977, 1978). Many more obese patients (98%) than nonobese patients (43%) reported eating when they were depressed, anxious, or angry (Rand, 1982). Weight changes associated with emotional processes were found significantly more often in obese than in normal-weight controls. For example, weight gains related to negative emotional experiences occurred in 90% of obese and 14% of normal-weight

individuals. Weight losses accompanied by positive emotional experiences were found in 83% of obese and 26% normal-weight individuals. These results suggest that many obese individuals increase their food consumption when they experience negative emotions and decrease their food consumption when they experience positive emotions; the changes in consumption result in weight fluctuations. In addition, mild forms of emotional eating may be found in some normal-weight individuals, but not have a significant effect on their weight.

A number of more recent studies of obesity have used college student populations. Lowe and Fisher (1983) asked overweight (15% or more above the normal weight range) and normal-weight female college students to record food intake and mood prior to eating for almost 2 weeks. For snacks but not meals, the overweight individuals experienced more intense emotional arousal before eating than normal-weight individuals. Overweight individuals also tended to consume more calories when experiencing negative emotions than normal-weight individuals. Finally, it would seem logical to expect that markedly obese individuals would demonstrate more emotional eating than moderately obese individuals. However, correlational data indicated that intake during meals accompanied by positive emotions was the only variable associated with degree of obesity among the obese. These findings suggest that emotional eating may be more important in distinguishing normal eaters from obese eaters than it is in distinguishing the eating of those who are more or less obese.

Hawkins and Clement (1984) studied binge eating in a college student population consisting of overweight females and normal-weight females. High percentages of both the normal-weight and overweight groups (85.7% and 94.2%, respectively) responded affirmatively to the question, "Do you ever binge?" The "modal binge" of the overweight group, however, differed from the typical binge of the normal-weight group. In the overweight group, the typical binge was: (a) more frequent, (b) longer-lasting, (c) more likely to be terminated by feelings of being painfully full, and (d) more likely to be associated with negative feelings about eating.

Lingswiler, Crowther, and Stephens (1987) examined the eating patterns of overweight subjects (15% or more over ideal body weight), normal weight binge eaters (10 or greater on the Binge Scale, Hawkins & Clement, 1980), and nonbinge eaters for 2 weeks. Subjects were asked to complete the Multiple Affect Adjective Checklist (Zuckerman, Lubin, Vogel, & Valerius, 1964) each morning and to monitor their food intake and mood during food intake throughout the day. Groups did not differ on overall anxiety, depression, or hostility measured at the beginning of each day. However, binge eaters had greater fluctuations in anxiety and depression than nonbinge eaters, and overweight subjects had greater fluctuations in anxiety, hostility, and depression than normal-weight subjects. Finally, there were no differences in global mood for normal-weight and overweight binge eaters on binge and nonbinge days, but there were more binges during negative

mood. This finding suggests that global moods account for little variance in the severity of binge eating, and moods around the time of eating are more important. The authors concluded that there are greater emotional fluctuations in eating disorder populations, and there is a relationship between negative mood states and binge eating.

The most recent study examining the relationship between obesity and emotion recruited 96 moderately obese subjects (30-60% over ideal body weight) using a newspaper advertisement asking for volunteers to participate in experimental weight loss programs (Schlundt, Hill, Sbrocco, Pope-Cordle, & Kasser, 1990). Subjects were asked to keep diaries for 2 weeks to record foods eaten, mood associated with each eating incident, and the social context of the eating incident. Findings indicated that for obese individuals, overeating and impulsive eating did not occur when individuals were hungry; they occurred when obese individuals were tired, bored, irritable, depressed, stressed, or nervous.

The third group of studies, which examined the relationship between eating and emotions in overweight, nontreated groups, confirms the results from the earlier studies and adds more detail to the understanding of obesity and emotions. Eating and weight gain were generally associated with negative emotional experiences. In addition, more mood fluctuation was found in individuals who were overweight or engaged in binge eating. Finally, overeating, binge eating, and impulsive eating did not occur when individuals were hungry; they occurred when individuals

were tired, bored, irritable, depressed, stressed, or nervous. In conclusion, the presence of general emotional arousal and negative moods in obese individuals and binge eaters during eating has been well-documented.

Bulimia

Studies examining the relationship between symptoms of bulimia and emotions are much more recent than the obesity studies of eating and emotion. Publication of these studies began in the early 1980's after the publication of diagnostic criteria for bulimia (American Psychiatric Association, 1980; Russell, 1979). The bulimia studies tend to examine emotions during the entire eating cycle rather than studying feelings immediately preceding an episode of binge eating. Thus, information has been collected about the impact that binge eating and other symptoms of bulimia may have on emotions, as well as the impact that emotional experiences may have on bulimic symptoms.

The Eating-Mood Cycle

Several studies have examined the relationship between eating and mood by having bulimic individuals report on eating habits and mood during the course of their everyday living. In one of the earliest studies examining the eating cycle and emotions of bulimics, bulimics and controls were asked to record information about mood, social situation, and food-related behavior each time they were paged by a beeper (Johnson & Larson, 1982). Overall, the mood of bulimic individuals was more dysphoric and had greater

fluctuations than normal controls. In addition, bulimics spent more time alone and more time in food-related behavior. The authors also performed a sequential analysis of mood and eating-related behavior. The mood preceding the binge/purge cycle was negative (e.g., individuals felt irritable, weak, inadequate). During the actual binge, the affective state of bulimics worsened. Bulimic individuals felt more guilt, shame, and anger; they felt less control and adequacy. The most sizeable shift in emotions, however, was associated with the purge (i.e., vomiting). Anger sharply declined, and alertness markedly increased. In addition, feelings of control and adequacy began to return to the baseline, but negative feelings had not returned to typical levels. Thus, the purge, not the binge, appears to offer bulimic individuals some relief from negative emotional states.

A later study was done to examine the eating cycle of bulimics as it unfolded, but subjects kept a continuous record of environmental, behavioral, and affective antecedents to vomiting instead of recording mood and eating behaviors only when a beeper sounded (Schlundt, Johnson, & Jarrell, 1986). Schlundt et al. (1986) found that positive and neutral moods were associated with a low probability of vomiting, whereas negative moods were associated with a high probability of vomiting. When affect changed from one eating episode to the next, increases in positive feelings were associated with low probabilities of vomiting, whereas increases in negative feelings were associated with higher probabilities of vomiting.

Additional studies support some of the findings of these record-keeping studies. Two studies support the findings of negative mood precipitating a binge. Abraham and Beumont (1982) found that tension was identified by 91% of their sample as the most frequent precipitant of a binge. In addition, Mitchell, Hatsukami, Eckert, and Pyle (1985) found that 83% of their sample of 229 bulimics reported feeling tense and anxious as a reason for binge eating. However, in Abraham and Beumont's sample (1982) unlike Johnson and Larson's (1982) sample, mood improved for some of the individuals during and after a binge (i.e., 34% achieved relief from anxiety during a binge and 66% were anxiety-free after a binge). However, vomiters, as opposed to non-vomiters, were more likely to feel relief from anxiety and other negative feelings after a binge. This phenomenon may be due to the expectation on the part of the vomiters of relief following the purge.

Because depression has been found to be a significant problem for many bulimics, Cooper, Morrison, Bigman, Abramowitz, Levin, and Krener (1988) compared mood changes during the binge/purge cycle of depressed and nondepressed bulimics. Using retrospective questionnaire reports for both groups, they found that the same changes in mood during the binge/purge cycle occur for depressed and nondepressed bulimics. For both groups, the binge was accompanied by high levels of energy, excitement, panic, and helplessness and moderate levels of security and relief. Feelings after the binge were generally unpleasant; levels of energy,

excitement, security, and relief were lower, whereas levels of panic, helplessness, guilt, disgust, and anger were increased. Feelings after vomiting were generally calm and pleasurable; feelings of security and relief increased. Feelings of panic, helplessness, energy, and excitement decreased, and guilt feelings returned to baseline levels. In conclusion, in these studies examining mood and the binge-purge cycle of bulimics, mood before, during, and after the binge was generally negative, but individuals experienced relief after the purge. This relationship was found for both depressed and nondepressed bulimics.

Dual Ratings of Mood

In the previous studies, subjects were asked to rate their moods during the binge-purge cycle, but no additional rating of subjects' mood was made. In two studies, ratings other than the subjects' self-report (i.e., objective ratings by psychiatrists and biochemical measures) were compared to subjects' self-report of mood. Kaye, Gwirtsman, George, Weiss, and Jimerson (1986) had both their subjects and psychiatrists rate mood before and after binge eating and purging. Subjects who had been binge eating and purging daily for at least 3 months prior to admission to the hospital were instructed to binge and purge in the hospital setting as if they were binge eating and purging at home. In addition to the subjects' self-report, psychiatrists rated the subjects on mood before and after the binge/purge cycle using the Brief Psychiatric Rating Scale (Headlund & Vieweg, 1980). On both

self-report and objective ratings by psychiatrists, 8 of the 12 subjects demonstrated reduced levels of anxiety following the binge/purge cycle, whereas only 4 of the 12 subjects demonstrated reduced levels of depression following the binge/purge cycle. The results suggest that binge eating and vomiting may provide bulimics with a mechanism for temporarily relieving a dysphoric mood state, especially anxiety.

In a case study design, Abraham and Joseph (1986-87) enhanced previous findings by assessing biochemical changes associated with the binge/purge cycle in addition to the subject's self-report of mood. From their experience treating bulimic clients, they observed that vomiting tended to reduce anxiety and provide a post-vomiting high or sense of relief. Following an incident of vomiting, they measured plasma ACTH and cortisol (i.e., putative markers for B-endorphin), as well as self-report of mood from the client. The client reported more euphoria and lower levels of anxiety and depression after vomiting, and biochemical changes were consistent with the client's self-report (i.e., plasma ACTH and cortisol levels rose after vomiting). The authors conclude that there are greater fluctuations of mood in bulimic individuals, and bulimics may use the binge/purge cycle as a tension regulation mechanism.

In conclusion, two studies using additional measures of mood (e.g., psychiatrist ratings and biochemical measures) found results consistent with bulimic individuals' self-report of mood during the binge-purge cycle. These results provide credence to

the notion that mood affects binge eating in bulimics, and binge eating and purging affect mood.

Studies of Binge Eaters

Several studies have examined the impact of emotion on binge eating, and compared binge eaters to bulimics. Greenberg and Harvey (1987) examined the impact of depression on binge eating in college women. In regression analyses, they found that the interaction of dietary restraint and biphasic mood shifts (i.e., cycling positive and negative moods) was a better predictor of binge eating than the interaction of dietary restraint and depression. These results and the results of some of the previous studies of bulimics (e.g., Cooper, Morrison, Bigman, Abramowitz, Levin, & Krener, 1988) suggest that affective lability possibly plays a role in the development of binge eating and the binge/purge cycle rather than higher overall levels of dysphoric mood.

Attempting to differentiate between bulimics and nonbulimic binge eaters on the eating-mood cycle, Lingswiler, Crowther, and Stephens (1989a, 1989b) assessed the antecedents and consequences of binge eating for bulimics, binge eaters, and normal controls for 1 week. Bulimics experienced significantly greater negative moods prior to their binge episodes than binge eaters and normal controls. In addition, both bulimics and binge eaters reported experiencing significantly greater negative moods before their nonbinge eating episodes than normal controls. The authors

concluded that negative moods may either precipitate eating in eating disordered populations, or may be characteristic of these populations, independent of food and eating.

In the second study of mood consequences of eating, bulimics experienced significantly greater immediate and delayed negative emotions than normal controls after all eating. Binge eaters experienced significantly greater negative emotions only following uncontrolled eating. For both bulimics and binge eaters, positive emotions that occur immediately after a binge significantly decrease in intensity within an hour and a half after the eating episode. Furthermore, positive emotions immediately after a binge coexist with stronger negative emotions. The authors suggest that binge eating may temporarily distract individuals from negative emotion rather than producing positive emotion.

Family Patterns and Severity

Two studies provide possible explanations for an individual's need to engage in disordered eating behaviors. A study by Kent and Clopton (1992) may provide some explanation for bulimics' need to handle emotion behaviorally (i.e., by eating). In a study of bulimics' perceptions of family interactions, bulimics had a significantly lower score on the Expressiveness scale of the Family Environment Scale, which measures the extent to which family members are allowed and encouraged to express their feelings directly (Moos & Moos, 1986). It is possible that bulimic individuals have been discouraged by their families from

expressing their feelings directly, so they must find some other outlet for dealing with their feelings. In addition, a study by Keck and Fiebert (1986) provides a possible explanation for the severity of an eating disorder. Their results suggest that the amount of avoidance of affective expression may be related to the severity of the eating disorder. They found that inpatient anorexics and bulimics had higher levels of avoidance of anxiety than outpatient anorexics and bulimics who had higher levels of avoidance of anxiety than normal dieters.

Conclusions

The studies examining mood and the binge/purge cycle of bulimic individuals present some consistent patterns. Across all studies, the binge/purge cycle was preceded by negative emotions (e.g., tension, anxiety, irritability, weakness, inadequacy). Feelings during a binge were mixed. During a binge, bulimics reported moderate levels of security and relief as well as increasing energy and excitement. However, they also reported reductions in control and adequacy and increases in panic, helplessness, guilt, shame, and anger during a binge. The period between the binge and the purge was characterized by unpleasant emotions. If any positive emotions were reported between the binge and the purge, they were accompanied by stronger negative emotions. Following the purge, feelings were generally calm and pleasureable. Reductions in anxiety, depression, and anger also reported following the purge. In addition, euphoria, relief, and

security were experienced following the purge. In conclusion, the cycle before the purge is dominated by negative feelings. After the purge, however, negative feelings lessen, and positive feelings increase. Thus, for bulimics, the possibility that emotion may be regulated behaviorally through eating has some strong empirical support.

Anorexia

In contrast to the extensive literature examining the relationship between eating behaviors and emotions in bulimic and obese populations, the study of emotional experience is almost nonexistent for anorexic populations. One study examined two cases of anorexia nervosa and 24 normal controls to determine their experiences during ordinary weeks in their lives (Larson & Johnson, 1981). The individuals were asked to fill out questionnaires asking about their situation and their subjective experience each time a pager was beeped. The results showed that the anorexic individuals spent more of their time alone and had lower average affect than the controls. In addition, one of the anorexic women reported feeling better when she was consuming food.

One possible reason for the shortage of studies examining anorexia and affect may be that the cyclical quality of mood variation and eating behaviors may not be present in anorexic populations as it is in bulimic and obese populations. It is also possible that the pattern is present for anorexics, but it is much

more subtle, so it has not been obvious that it needs to be studied. On the other hand, the anorexic's strict control over eating and food may parallel a tight control over emotions, so little fluctuation occurs.

Conclusions

In conclusion, the studies examining the relationship between eating behaviors and emotions suggest that emotions seem to influence eating in eating disordered individuals, and eating seems, in turn, to influence emotional experience.

Prevalence and Classification

Identifying definitive prevalence rates for each of the eating disorders has proven difficult. Part of the problem is interpretation of the definition of the disorder or criteria used to define it. Another part of the problem is choice of method of measurement of the disorder (i.e., self-report or interview measure).

Obesity

The prevalence of obesity depends on the standard used to measure obesity (Bray, 1987; Neggers, Stitt, & Roseman, 1989; Simopoulos, 1987). Part of the problem is the confusion between definitions of overweight and obesity. Overweight is generally considered to be a less severe case of excess body fat than obesity, but actual cutoff points between overweight and obese are not uniform in the literature. In addition, different measures of

obesity (e.g., body mass index, height and weight measurements, circumference measurements and skinfold measurements) yield different prevalence rates.

Given these constraints, prevalence estimates of obesity in the population range from 5-50% depending on the criterion used to define obesity (Neggers, Stitt, & Roseman, 1989). Bray (1987) offers what he considers to be sound estimates of overweight and obese. He suggests that the prevalence of massive obesity, defined as above 95% on body mass index, is 5.8% for men and 8.3% for women. The percentage of individuals who are 20% or more overweight is 14% of men and 23.8% of women. In addition, average weight has been increasing in recent years by 2-8 pounds per person (Bray, 1987).

A recent study related weight problems to age, gender, race, and social class (Rand & Kulda, 1990). Prevalence of obesity was lowest among the youngest and oldest respondents; ages of subjects in the study ranged from 18 to 96. Prevalence rates of obesity were also inversely related to socioeconomic status for women, but not for men. In addition, 46% of black women, 28% of black men, 18% of white women, and 16% of white men were overweight (i.e., 20% or more above ideal weights). Finally, white women who reported "no weight problem" had a mean weight well below the lower limit of the normal weight range, whereas white men, black men, and black women reporting "no weight problem" had mean weights above the normal weight range. These results suggest that

prevalence of weight problems in the general population is affected by age, gender, race, and social class.

A solution to the problem of prevalence of weight problems and classification of individuals with weight problems has been recommended by Neggers and colleagues (1989). They argue that there is no clear cutoff between normality and obesity, so weight-related difficulties should be conceptualized as a continuum.

Anorexia Nervosa and Bulimia Nervosa

Pope, Hudson, and Yurgelun-Todd (1984) administered a questionnaire assessing eating disordered behavior to 300 female shoppers. They reported that .7% of the shoppers had a history of anorexia, and 10.3% of their shoppers had a history of bulimia. These figures were compared to previous estimates of prevalence of eating disorders in college student populations (Halmi, Falk, & Schwartz, 1981; Pyle, Mitchell, Eckert, Halvorson, Neuman, & Goff, 1983). In college student populations, prevalence rates for anorexia range between 1.0% and 4.2%, and prevalence rates for bulimia range between 7.8% and 19.6%. Based on a comparison of previous findings in college students and their prevalence rates, the authors concluded that eating disorders are increasing in prevalence and constitute a major health problem. This study and the conclusions drawn from it have been criticized in the literature. A screening instrument, even if it has adequate positive predictive value, cannot accurately identify low

probability behaviors (Carter & Moss, 1984; Williams, Hand, & Tarnopolsky, 1982). These instruments designed to measure a low probability behavior invariably have high false positive rates.

Like prevalence rates for obesity, prevalence rates for anorexia and bulimia depend on the method of case detection as well as the criteria for the disorder. When screening instruments alone are used to assess prevalence, rates are much higher than if screening is followed by an interview. This occurs, because identifying positive symptoms on a symptom inventory does not mean that an individual meets the diagnostic criteria for a specific disorder. For example, an individual may have a high score on the Eating Attitude Test, but because that inventory does not tap the extent or severity of the eating difficulties, the individual may not be diagnosed in a clinical interview as anorexic. As the criteria for eating disorders tighten with each new edition of the Diagnostic and Statistical Manual of Mental Disorders and screening with symptom inventories is followed by diagnostic clinical interviews, prevalence rates among young women for anorexia and bulimia have lowered. The prevalence of anorexia is about .2%, and the prevalence of bulimia is 1-2.5% (Fairburn & Beglin, 1990; Kent & Clopton, 1992; Whitaker, Johnson, Shaffer, Rapoport, Kalikow, Walsh, Davies, Braiman, & Dolinsky, 1990). These prevalence rates do not suggest that eating disorders are at epidemic proportions.

Prevalence rates for anorexia and bulimia differ across a number of variables (Szmukler, 1985). The prevalence rates are

much higher for females than for males. Individuals in their teens and early 20's have eating disorders more often than individuals at all other ages. Upper- and middle-class individuals have eating disorders more often than lower-class individuals. Whites have eating disorders more often than blacks, but the rates of eating disorders are increasing for blacks. In addition, higher prevalence rates of eating disorders have been identified among special populations (e.g., ballerinas and models).

In summary, refined diagnostic criteria and increasingly sophisticated methodologies have led to lower estimates of clinical anorexia and bulimia. This does not, however, suggest that only 1-2.5% of the population has eating pathology (Fairburn & Beglin, 1990). "In the community, a spectrum of disturbance is encountered in which there appear to be no obvious discontinuities between normality and psychopathology" (Fairburn & Beglin, 1990, p. 406). Thus, the important question is often not whether an individual has an eating disorder, but how much of it he or she has (Szmukler, 1985).

Conclusion

Across the literature for the three eating disorders, prevalence estimates have varied widely due to differing diagnostic criteria and different methods of case detection. One of the solutions that has been offered in each of the literatures is to examine eating behaviors on a continuum, because the various

forms of eating pathology appear to lie on a continuum in the normal population.

Eating in the General Public

Studies of eating behaviors in nonclinical college and adult populations present a picture of eating behavior in the general population. Langer, Warheit, and Zimmerman (1991) examined problem eating behaviors and related attitudes in a sample of 2,075 adults living in the southeastern United States. The following results were found: (a) 12.9% binge, (b) 1.2% self-induce vomiting, (c) 5.6% use laxatives and diuretics to control weight, (d) 5.9% have had weight fluctuations of 10 pounds or more in the last 12 months, (e) 21.9% have dieted in the last 2 months, (f) 4.9% eat less in public, (g) 44.2% think they have a weight problem, (h) 45.2% feel guilty after eating, and (i) 7.9% say life is dominated by conflicts about eating. These results suggest that there is considerable concern about eating and eating pathology in a general adult population.

Three studies have examined eating behavior in general college populations. The first study examined male and female differences in eating and weight-related behaviors (Lundholm & Wolins, 1987). Results showed that females: (a) had a greater desire to be thin, (b) more frequently used laxatives, and (c) had a greater eating response to both internal (i.e., emotions) and external (i.e., food is present and looks appetizing) cues. In addition, the authors note a difference between past and current

weight-related behaviors. In the past, males generally exercised to lose weight, whereas females dieted to lose weight. Currently, men and women employ exercise and diet equally to control weight, which suggests that both sexes are adopting more appropriate health practices.

In a second study, 1,056 undergraduate women were administered the Eating Disorder Inventory (Klemchuk, Hutchinson, & Frank, 1990). High rates of body dissatisfaction were reported in college women. In addition, two risk groups were identified among college women, a body dissatisfaction group and an eating disordered group. The women in the body dissatisfaction group, the less pathological of the two risk groups, reported extremely negative attitudes toward their bodies. Many endorsed the most extreme of the six rating categories for all nine questions on the body dissatisfaction scale of the EDI. However, only on the body dissatisfaction scale do these women score at the pathological level. Generally, the women in the body dissatisfaction group are not engaging in bulimic behaviors (e.g., binge eating and vomiting) and are not reporting other psychological disturbance at pathological levels. In the eating disorder group, women reported lower levels of body dissatisfaction than women in the body dissatisfaction group. In general, however, women in the eating disorder group demonstrated more pathology of cognitions, attitudes, and behaviors. They also had poorer psychological adjustment suggesting that either they had serious

psychopathology, or were at risk for developing serious psychopathology.

Kristeller and Rodin (1989) suggested that little effort has been allocated to developing a classification of eating behavior applicable to the general population. Using cluster analysis, they identified six eating patterns found in normal college undergraduates: (a) uninhibited eaters, (b) uninterested eaters, (c) bingers, (d) guilty dieters, (e) high self-monitors, and (f) low self-monitors. The uninhibited eaters were enthusiastic about food. They were least likely to be dieting, reported oversnacking, used moderate rather than extreme satiation cues, and used less guilt cues to control eating. This group, which consisted of more men than women, saw physiological factors and loss of control as causes of obesity while acknowledging that emotional changes may affect food intake adversely.

Kristeller and Rodin's (1989) second group, the uninterested eaters, were similar to the previous group in the following ways: (a) avoidance of dieting, (b) endorsement of rational and physiological factors in weight management, and (c) minimization of the role that guilt plays in controlling food intake. In contrast to the first group, this group denied overeating and did not seem to delight in food. In the uninterested group males also outnumbered females. In the third and fourth groups, bingers and guilty dieters, females outnumber males. The bingers had the highest scores on binge eating and oversnacking, used guilt as a primary satiation cue, attributed weight problems to emotional

distress, and were most likely to be dieting. The guilty dieters were the most highly controlled group and the most inhibited eaters of all the groups. This group managed eating by guilt rather than the use of internal cues and associated eating with anxiety and depression. This group, in contrast to the bingers, did not report that eating was out of control.

The high self-monitors demonstrated self-control around food intake. This group endorsed the most items indicative of both the use of moderate and extreme internal satiation cues. In addition, they endorsed few factors (e.g., physiology, emotional distress) as contributing to weight problems. The low self-monitors, on the other hand, were internally unaware and failed to endorse items indicative of using internal satiation cues. They also failed to identify emotional distress as a trigger to eating and scored moderately on binge eating and oversnacking items. In these last two groups, males outnumbered females.

The identification of these groups suggests a number of interesting ideas about eating in the general public. First, these groups can be ranked along a continuum from healthy eating to eating disturbance. The first two groups, uninhibited eaters and uninterested eaters, reasonably regulate food intake and are at the healthy end of the continuum. Uninhibited eaters enjoy eating with an occasional overindulgence, and uninterested eaters do not care much about food and eating. In the middle portion of the continuum, high self-monitors and low self-monitors, are inhibited with regard to food intake without dieting obsessively.

They do not tend to overindulge, but report occasionally losing control. The bingers and guilty dieters comprise the disturbed end of the eating continuum. Both groups have disordered food intake and experience distress concerning their eating and weight. They have similar dieting patterns and use guilt to control their eating. Finally, they relate eating to negative emotions, which is similar to results found in studies examining eating and affect in eating disordered populations (i.e., bulimics and obese). Amount of overeating and episodic binge eating distinguishes these two groups from each other.

In addition to suggesting that eating disturbance lies on a continuum in a normal population, these results also demonstrate significant gender differences in eating patterns. The groups of uninhibited eaters and uninterested eaters were predominantly comprised of men, whereas the other four groups were comprised of more women than men. This gender difference in group composition suggests that more women than men have disturbed eating patterns. Kristeller and Rodin (1989) state that according to their results, 50% of women have markedly disturbed eating patterns. These results suggest that research concerning eating and related difficulties should not be confined to clinical samples of individuals with eating disorders; this type of research is necessary in normal populations.

APPENDIX D

EXTENDED LITERATURE REVIEW: DESCRIPTION AND HISTORY
OF ALEXITHYMIA

EXTENDED LITERATURE REVIEW: DESCRIPTION AND HISTORY OF ALEXITHYMIA

This appendix provides a description and a historical account of alexithymia.

Description of Alexithymia

The term alexithymia, which means literally a lack of words for emotions, was originated by Sifneos (1972) to describe the cognitive-affective disturbance that he observed in many psychosomatic clients. This multidimensional disturbance, which is no longer recognized as being unique to individuals with psychosomatic illnesses, includes the following characteristics: (a) difficulty in identifying and describing feelings, (b) difficulty in distinguishing between feelings and the bodily sensations associated with emotional arousal, (c) restricted imaginative processes demonstrated by a paucity of dreams and fantasies, and (d) a cognitive style that is concrete and reality-based (Taylor, Bagby, Ryan, & Parker, 1990).

Before describing more fully the primary cognitive and affective disturbances found in alexithymic individuals, it is necessary to distinguish between affects, emotions, and feelings as they are differentiated in the alexithymia literature. Affect is defined as "a general personal private state of being which has both biological and psychological components" (Sifneos, Apfel-Savitz, & Frankel, 1977, p. 50). Emotion refers to the biological side of affect, and feeling refers to the psychological

side of affect. Emotions are visceral responses that originate in the limbic system (i.e., amygdala and hippocampus) of both human beings and animals. Emotions produce reflex responses, and emotions have few cortical images, fantasies, or thoughts associated with them (Sifneos, 1988). Feelings, on the other hand, are the subjective, conscious images, fantasies, and thoughts that are associated with the visceral emotions. Neocortical and thalamic representations are responsible for conscious awareness and recognition of a feeling. Feelings are unique to human beings. Individuals with alexithymia have a deficit in the feeling component of affect. Consequently, affect is channeled physiologically, and the emotional experience tends to be stronger, which may lead to the development of psychosomatic symptoms.

Highly alexithymic individuals have a primitive experience of affect. As with an infant, affects are undifferentiated (i.e., nonspecific) and un verbalized. Instead of being able to distinguish many different affective experiences, the individual either experiences a vague sense of distress or contentment. When the individual experiences distress, it is experienced somatically (e.g., tightness in the stomach, a headache). These physiological experiences are generally not consciously connected with the stressful situations that serve as catalysts. Consequently, alexithymic individuals do not experience and cannot label the feeling (i.e., the psychological component) associated with an emotion (i.e., the biological component). These individuals are,

therefore, unable to differentiate fatigue, sadness, anxiety, fear, and any number of other feelings. Often, however, the individual has learned to compensate, albeit superficially, for this deficit. Socially, the person has learned that certain situations elicit specific feelings, and the person claims to experience the feeling appropriate to a given situation. Upon further questioning, it is clear that the person is unable to elaborate beyond the label to describe the specific feeling state. Finally, alexithymic individuals are subject to sudden affective responses of considerable intensity that stop as abruptly as they begin. For example, an alexithymic individual could become suddenly tearful, but unable to describe feeling sad or explain what caused the sad feeling.

Alexithymic individuals seem to compensate cognitively for their affective deficit. Thus, they often function successfully at work and seem intelligent and well-adjusted to reality. With further interaction, it becomes clear that alexithymic thinking also has its difficulties. The alexithymic cognitive style is stimulus-bound, tied closely to "external" events or actions. This tendency to focus on external processes and activities and to report trivial details of everyday life appears sterile and monotonous to others. This cognitive style has been called "pensee operateire" by Marty and de M'Uzan (cited in Krystal, 1988), suggesting that the externalized, detail-driven thinking takes over at the expense of creative or imaginative thinking. The fantasy and dream lives of these individuals, therefore, tend

to be impoverished. Sifneos (1988) considers alexithymia to be the opposite of creativity.

Historical Development of the Alexithymia Construct

Before the identification of alexithymia as a construct, a number of authors described syndromes that would clearly fit the description of alexithymia. Fenichel (1945) wrote about psychoanalytic patients with compulsive characters. When psychoanalysis had reduced the ability to block feelings, Fenichel observed that these individuals began to complain about changes in certain bodily sensations without realizing the psychological significance of the changes. Before these compulsive characters rediscovered their feelings fully, they first became aware of the feeling substitutes, the somatic symptoms. In place of guilty feelings, intestinal sensations frequently appeared, and in place of disgust, oral and stomach sensations were experienced. Furthermore, this type of patient produced fantasies devoid of feelings and spoke of the most agitating experiences and memories without becoming agitated.

Ruesch (1948) contrasted the mature person with the infantile person. The mature person is able to discharge tension through initiation of action to remove the cause of the frustration. This individual expends any excess tension through verbal, gestural, or creative expressions in interpersonal relations. However, the release of tension in the infantile person is either action-oriented or organically expressed. The infantile character

consistently shows externalization of feelings and emotions, because he does not trust what is happening within himself. Instead of relying on his own feelings, he looks to models to follow their behavior. Instead of perceiving his own reactions, the infantile character projects his feelings into other people and concludes that these others feel the feelings that he has disowned.

Marty and de M'Uzan (cited in Taylor, 1987) observed that many of their psychosomatic and physically ill patients were unable to produce fantasies. During interviews, the content of the patients' associations was mundane, unimaginative, and tied to reality. This pragmatic, affectless, unimaginative, concrete, impoverished, object-bound, narrow, operational behavior was labeled "pensee operateire," which means operative thought. The patient possessing this particular collection of traits bypasses the psychological dimension with its fantasies and conflicts and engages in the most elementary forms of body language and somatization.

The significance of these earlier observations was not fully appreciated until the early 1970's. At that time, Nemiah and Sifneos (1970) began to systematically study the communication style of psychosomatic patients. In 1972, Sifneos coined the term alexithymia to label the deficits that he observed in many psychosomatic patients. According to Sifneos, psychosomatic patients, in contrast to neurotics, have an obvious difficulty describing subjective feelings and a communication style

characterized by a preoccupation with minute details of external events and a paucity or total absence of drive-related fantasies. Independently, Krystal (1968; Krystal & Raskin, 1970) was observing similar characteristics in patients with severe Post-Traumatic Stress Disorder and drug dependence.

In psychoanalytic circles, this reduction in emotional expressiveness and limited fantasizing ability has typically been labeled "not psychologically minded" (Singer, 1977). For analysts, the absence of psychological-mindedness is assumed to mean that the patients are unlikely to benefit from psychoanalysis. Taylor, Bagby, and Parker (1989) suggested that alexithymia more accurately describes the phenomenology of the cognitive-affective disturbance of these nonpsychologically-minded individuals. Alexithymia also taps the dimensions previously identified as nonpsychologically-minded (i.e., difficulty identifying and describing feelings, inability to use affects as signals of inner conflict, restricted imaginative processes, externally-oriented thinking, tendency to focus on and amplify the physiological component of arousal, and proneness to discharge tension through compulsive behaviors). Thus, Taylor et al. (1989) suggested that nonpsychological-mindedness can now be subsumed under the label of alexithymia, and individuals can be assessed for alexithymia to determine their suitability for psychoanalysis.

Despite numerous theoretical and case accounts of alexithymia and numerous attempts to measure alexithymia, the existence of alexithymia as a separate construct has often been questioned.

For example, alexithymia has been considered a social phenomenon, with lower class individuals regardless of diagnosis having alexithymia (Borens, Grosse-Schulte, Jaensch, & Kortemme, 1977). In addition, the literature on alexithymia has often been confused and intertwined with the literature on repression and denial (Krystal, 1988). Finally, inadequate attempts to measure alexithymia have led to discrepant findings, which call into question the authenticity of the construct (Bagby, Taylor, & Atkinson, 1988; Norton, 1989; Paulson, 1985).

Rigorous empirical research is one way to provide evidence that either supports or refutes the validity of a construct. One method of construct validation in the behavioral sciences is the development of a personality test to measure the construct (Taylor, Bagby, Ryan, & Parker, 1990). The requirements of such a personality test are as follows: (a) item content represents the theoretical domains of the construct, (b) the domains relate to one another in a theoretically consistent manner, (c) the test produces results consistent with theoretical predictions, and (d) the test is distinct from measures of different constructs and related to measures of similar constructs. In addition, statistical procedures must provide evidence of relevant measures of reliability and validity.

Although previous attempts at developing such a test have been inadequate, the Taylor group constructed the Toronto Alexithymia Scale (TAS), which provides construct validity for the concept of alexithymia (Taylor, Bagby, Ryan, & Parker, 1990).

Details regarding the development and psychometric properties of the TAS are presented in the methods section of this document. Research using the TAS has addressed some of the previous questions about the construct of alexithymia. First, although psychological-mindedness has often been thought to be related to intelligence, socioeconomic status, and education, research with the Toronto Alexithymia Scale shows no relationship between alexithymia and any of those variables (Taylor, Ryan, & Bagby, 1985).

In addition, three studies have demonstrated that alexithymia is different from denial (Bagby, Taylor, & Ryan, 1986; Loiselle & Dawson, 1988; Wise, Mann, Hryvniak, Mitchell, & Hill, 1990). Bagby and colleagues (1986) administered the Toronto Alexithymia Scale, the Basic Personality Inventory (BFI, Jackson, 1974) and a number of other scales to 81 college students. The failure to find a significant correlation between the TAS and the denial subscale of the BFI ($-.06$) suggests that alexithymia and denial are two separate constructs. Similarly, Wise et al. (1990) administered the Toronto Alexithymia Scale and the Illness Behavior Questionnaire (IBQ, Filowsky, 1969) to four groups (i.e., psychiatric outpatients, psychiatric inpatients, medically ill patients, and healthy controls). They also found that denial as measured by the denial scale on the IBQ was unrelated to alexithymia as measured by the TAS. Loiselle and Dawson (1988) approached the alexithymia-denial issue indirectly. They administered the TAS, the Patient Self-Disclosure instrument, and

the Private Self-Consciousness scale to 333 college students. Individuals scoring in the alexithymic range found topics related to personal feelings to be significantly more difficult to discuss, but ratings of the importance of self-disclosure of personal feelings did not differ from individuals in the nonalexithymic range. The authors suggested that the opposite pattern would be expected if denial of affect was common in alexithymic individuals.

APPENDIX E

EXTENDED LITERATURE REVIEW: ETIOLOGY OF ALEXITHYMIA
THERAPY WITH ALEXITHYMICS

EXTENDED LITERATURE REVIEW: ETIOLOGY OF ALEXITHYMIA

THERAPY WITH ALEXITHYMICS

This appendix provides a description of the neurological and psychodynamic theories of alexithymia. In addition, approaches to therapy with alexithymics are discussed.

Theories of Etiology

Several mechanisms have been identified as possible etiological factors for alexithymia. The most widely studied mechanisms involve neuroanatomy/neurophysiology and psychodynamic/developmental principles.

Neuroanatomical and Neurophysiological Mechanisms

The first neurological theory of alexithymia suggests that there are inadequate connections between the subcortical limbic system (i.e., the substrate for emotion) and the overlying neocortex (i.e., the substrate for language and associations). This disconnection, due to hereditary factors, results from either a structural neuroanatomic defect or a neurobiologic deficiency in the form of a biochemical or physiologic abnormality (MacLean, 1949; Nemiah, 1975). Failure to regulate and modulate distressing emotions at the neocortical level may result in exacerbated physiological responding in the autonomic nervous system in response to stressful situations.

The second neurological theory, which makes use of the current understanding of hemispheric specialization, suggests that

alexithymia results from either a disconnection between the cerebral hemispheres or damage to the nondominant (right) hemisphere (Miller, 1986-87). Research on hemispheric functioning has shown that the left hemisphere is involved in linguistic processing, deductive reasoning, and logical descriptive analysis. The left hemisphere is especially involved in perceptual and conceptual analysis of detail, and it plays a role in interpreting literal, syntactic, and semantic qualities of communication. The left hemisphere processes information sequentially; it linearly organizes, interprets, and explains impulses that arise in nonlinguistic portions of the brain, so language-dependent areas can achieve understanding.

The right hemisphere, on the other hand, is involved in spatial processing and imagal coding. The right hemisphere is more intuitive, inferential, and emotional; it plays a special role in the inflective and rhythmic qualities of communication. The right hemisphere processes information nonlinearly; it forms solutions based on multiple converging ideas. The processing in the right hemisphere is congruent with the psychoanalytic notion of primary process thinking. The right hemisphere is less involved than the left hemisphere with meeting the individual's needs within the confines of reality, the psychoanalytic notion of secondary process thinking.

The neocortex of the nondominant right hemisphere plays a role in the emotional aspects of thought and language production. Thus, if there is damage to the right hemisphere, emotional

aspects of communication will be deficient. Similarly, if there is a disconnection between the right and left hemispheres, information about emotion from the right hemisphere cannot be sent to the left hemisphere to be verbalized. This hemispheric disconnection theory was originally proposed when striking similarities were found between alexithymic individuals and individuals with a surgically disconnected corpus callosum (Hoppe & Bogen, 1977). The alexithymic cognitive-affective style reported in surgical disconnection cases has also been found in congenital cases of hemispheric disconnection (Buchanan, Waterhouse, & West, 1980). The common mechanism seems to be a severing of access of the emotional-symbolic material of the right hemisphere to the left hemisphere's language articulation.

One controlled study assessed alexithymia in six patients with completely disconnected cerebral hemispheres, two patients with partially disconnected cerebral hemispheres, and eight normal controls matched on sex and age (TenHouten, Hoppe, Bogen, & Walter, 1986). Comparisons between the groups were based on content-analytic measures of the subjects' spoken and written responses to a film depicting death and loss. The individuals with surgically disconnected cerebral hemispheres were more alexithymic on all variables (i.e., they tended to use fewer feeling words and express fewer feelings). A discriminant function analysis found four variables (capacity for symbolization, percentages of affect-laden terms and auxiliary verbs, and fantasy about symbols) that effectively discriminated

the three groups and correctly classified 15 of the 16 subjects. A weakness of this study was that the classification accuracy of the discriminant functions was assessed with the same subjects whose data had been used to create the discriminant functions.

Further support for the disconnection theory comes from a study of the dreams of alexithymics and individuals with surgically disconnected cerebral hemispheres. Alexithymic individuals report few dreams. When they do report dreams, the content is impoverished and consists of specific details. Hemispherically disconnected individuals report few, if any, dreams after surgery although they had vivid dreams before surgery (Bogen & Bogen, 1969). Their sleep patterns, however, show a normal amount of REM activity. Thus, it appears to be an inability to report dreams, rather than an inability to have them. Conscious appreciation of dreams must involve an integration of nonarticulated emotion (right hemisphere material) with a verbal interpretation (left hemisphere activity).

In summary, biological models of alexithymia suggest that some form of neurological abnormality leads to the symptoms that have been identified as alexithymic. This abnormality results in inadequate connections between either the subcortical limbic system and the neocortex or between the right hemisphere and left hemisphere. The result of either failure in connection is that emotional/affective material fails to be expressed verbally.

Psychodynamic/Developmental Mechanisms

In addition to examining specific physical deficits that could potentially lead to the development of alexithymia, Hoppe (1977) also proposed the idea of a "functional commissurotomy." Alexithymia could be a defense mechanism in which the emotional perceptions of the right hemisphere are being denied expression by the left hemisphere. The emotional information instead expresses itself through somatic channels, which is one of the right hemisphere's preferential modes of expression.

McDougall (1982) formulated a more elaborate psychodynamic theory of alexithymia that is based on the early mother-infant relationship. McDougall suggested that the mother serves as a secure holding environment in which an infant's needs, including emotional needs, are perceived and satisfied by the mother before they are actually experienced as needs by the infant. Even in normal development, however, there is an imperfect fit between the child's affective needs and the mother's availability and response. This imperfection creates the first opportunity for awareness of separation and the eventual development of the use of transitional objects (i.e., inanimate objects such as blankets or dolls that the child learns to manipulate to meet his or her needs). If the frustration of separation from the mother is too painful or too abrupt, trauma and conflict over separation result. This often occurs when the mother meets her own emotional needs instead of the child's emotional needs. In these instances, the child does not internalize the experience of having a healthy

relationship or form an adequate internal symbolic representation of a caring mother. McDougall (1982) says that without these internal representations, all that is experienced in a relationship is a sense of being submerged and losing one's identity.

Essentially, the individual learns to close off any external stimuli that are inclined to trigger emotionally significant thoughts and fantasies challenging a fragile sense of identity. This tendency to attack and put out of awareness both a feeling and its representation provides one explanation for the observations that alexithymic individuals cannot accurately experience and describe how they feel, that they feel an inner emptiness, and that they show a poverty of dream life and daydreaming.

In addition to providing one possible explanation for the development of alexithymia, McDougall (1982) also attempts to explain how alexithymia maintains itself. McDougall suggests that alexithymic symptoms, just like any other psychological symptoms, protect the individual from some anticipated fear. According to McDougall's theory, the unconscious fears of alexithymics are more closely related to psychotic than neurotic fears. McDougall believes that neurotics have conscious concerns about securing and maintaining a satisfying love life and personally fulfilling work. Psychotics, on the other hand, also have more basic unconscious conflicts about the right to exist and be a separate individual. "Deep uncertainty about one's unassailable otherness leads to the

threat of contact with others, fear of implosion or of explosion; i.e., of losing one's body limits, one's feeling of identity, or the control over one's acts" (McDougall, 1982, p. 86).

According to McDougall, alexithymics, like psychotics, protectively detach themselves from reality, but in a more socially acceptable manner. When psychotics become overwhelmed by affective pain, they protect themselves by destroying meaning and creating a new, personal reality to make existence more tolerable. McDougall (1982) suggests that alexithymics simply drain external reality and relationships of their meaning. By maintaining an internal deadness, the alexithymic protects himself from the dangers of implosion or abandonment, which would threaten his existence. Thus, McDougall's theory posits that alexithymia is an unusually strong defense against inner liveliness. The more fragile individual will have stronger walls built up against potential collapse (i.e., will express much less, if any, feeling).

Finally, McDougall (1982) comments on an interpersonal process that she observes between alexithymic individuals and others with whom they interact. Without awareness of the process, the alexithymic individual attempts to make other people experience the inner feelings that have been disowned. The alexithymic individual does this by performing behaviors that elicit the disowned affect from others. Without awareness of being subjected to this manipulation, these other individuals act out the alexithymic's conflicting feelings. The alexithymic

individual then has external validation that other people experience certain feelings, and the alexithymic individual does not experience them. For example, an alexithymic individual, who has legitimate reasons for being angry with another person, will irritate the other person until the person becomes angry with the alexithymic individual. Consequently, the alexithymic individual says that the other person is angry with him rather than recognizing or admitting that he is angry at the other person.

Krystal's (1988) developmental theory of alexithymia proposes that alexithymia represents an affect regression, an arrest in the development of affect, or both. According to Krystal, normal development of affect occurs in a series of stages. Initially, an infant's affective experience consists of arousal or a general disturbance in his existence. Gradually, the infant begins to differentiate between a state of pleasure and a state of distress. This dichotomy slowly develops into an awareness of several distinct feelings. During the final stages of increasing emotional complexity, the child is acquiring language. At this time, two other processes begin to occur: verbalization and desomatization.

According to Krystal, the mother must respond to the child's affective experiences appropriately throughout the entire course of affective development and encourage verbalization of affects when the child begins to develop verbal abilities. This requires that the mother keep the intensity of the affective experience at an optimal level, so the child learns to deal with gradually

increasing intensities of emotions, both pleasureable and painful. The mother must also label the emotional experiences with words. As verbalization of affect increases, expression of affect through physical channels decreases (i.e., desomatization of affect occurs). Object constancy, the ability to internally represent external experiences, allows the child to control his own emotions as his mother did previously.

Krystal suggests that alexithymics have either had an arrest in this developmental procedure, or a traumatic situation has caused a regression in affective functioning to an earlier stage of affective development. Arrests in the development of affect can be caused in a number of ways. Parents may be unable to deal effectively with certain feelings, so they do not allow the child to express these feelings, and they do not label these feelings for the child. When these unacceptable feelings arise for the child, they are generally expressed physically (i.e., somaticized), because they have never been labeled or effectively handled. Similarly, a parent may become anxious when any affect is expressed by the child instead of accepting the affective expression and responding calmly. When this occurs, the child does not incorporate the parent's ability to accept affective expression and respond calmly. Instead, the child becomes anxious when affects arise, and the anxiety is lowered by blocking out the experience of the affect. According to Krystal's theory, emotionality without a transformation into predominantly cognitive forms (i.e., words or thoughts) produces psychosomatic symptoms.

In addition to being caused by inadequate affective development, Krystal suggests that alexithymia may result from an affect regression later in life. Some individuals learn how to adequately handle common levels of emotional intensity. In the course of living, however, they encounter unusual levels of emotional intensity (i.e., participation in a violent war experience). Because they have never learned to deal with such high levels of affective intensity, they adapt by regressing affectively, and they develop alexithymic symptoms. This type of affective regression has been found in Vietnam veterans experiencing Post-Traumatic Stress Disorder (Krystal, Giller, & Cicchetti, 1986; Shipko, Alvarez, & Novello, 1983).

In summary, both developmental and psychoanalytic theories of alexithymia suggest that interactions between parents, especially the mother, and a child early in life determine a child's later affective expression. If the parents respond appropriately to a child's needs and affective expression early in life, a child will develop healthy affective expression. If the parents are unable to respond to a child empathically, the child will fail to develop healthy affective expression.

Implications for Therapy

The qualities found deficient in alexithymic individuals are the very qualities that tend to lead to successful outcomes in psychotherapy (Greenburg & Safran, 1989). Because alexithymic individuals lack these abilities, they are often considered poor

candidates for psychotherapy. Krystal has boldly stated that "alexithymia is the single most common cause of poor outcome or outright failure of psychoanalysis and psychoanalytic psychotherapy" (1988, p. xi). Because alexithymic individuals often have unsuccessful experiences in therapy, a growing debate has developed about how to effectively handle alexithymia in therapeutic settings. Although there is no consensus at this time, the debate suggests that the alexithymic characteristics must be recognized in some way in treatment planning for treatment to succeed, especially if psychoanalysis is the treatment modality.

In a study of psychotherapy discontinuation, patients were randomly assigned to a psychoanalysis group or a systematic desensitization group. In each group, 60% of the patients dropped out of therapy. Although there was no difference in alexithymia scores for the individuals who continued in the desensitization group and the individuals who dropped out, the individuals who dropped out of psychoanalysis had significantly higher alexithymia scores than those who continued (Pierloot & Vinck, 1977). These results suggest that persons with alexithymia are frustrated with the demands of psychoanalysis, but they are as likely as other clients to stay with systematic desensitization. It is possible, however, that these results could have differed if the analysts would have been aware of the specific characteristics of alexithymic patients and made appropriate modifications in the therapy.

Primary and Secondary Alexithymia

Part of the debate about which type of therapy is appropriate for alexithymics hinges on a distinction made between primary and secondary alexithymia (Freyberger, 1977). Primary alexithymia results from a genetic or neuroanatomical defect, whereas secondary alexithymia results from a developmental regression/arrest or a traumatic experience. A recent study found support for Freyberger's concept of secondary alexithymia as a developmental regression to reduce the experience of painful affect (Wise, Mann, Mitchell, Hryvniak, & Hill, 1990). This study examined the relationship between alexithymia, quality of life, and ability to perform daily living activities in 53 medical inpatients and 55 healthy age-matched controls. On the TAS, medically ill patients were higher in alexithymia than the control group. In addition, alexithymia was best predicted by depressed mood and lowered quality of life, rather than by severity of the medical illness. These results suggest that alexithymia, at least in this medical population, is probably a reaction to painful affect.

It is generally suggested in the psychosomatic literature that primary alexithymia is best treated with supportive techniques, but secondary alexithymia can be treated with insight-oriented psychotherapy. Although this general rule has been offered, there are staunch believers for using only psychoanalysis or only supportive techniques with all

alexithymics, as well as those who recommend a modified analytic approach.

Type of Alexithymia Guides Treatment

In his discussion of the appropriate therapeutic techniques for alexithymics, Sifneos (1975, 1983) makes a distinction between dynamic, anxiety-provoking therapy and supportive, anxiety-reducing therapy. A goal in psychodynamic therapy is to help the patient become aware of his interpersonal interactions, unconscious conflicts, and defenses, and this procedure inevitably raises the individual's level of anxiety. In supportive therapy, the therapist understands the patient's interpersonal interactions and unconscious conflicts, and the therapist uses strategies to ameliorate the patient's difficulties without making the patient aware of his interpersonal interactions and unconscious conflicts. This approach tends to reduce anxiety by bolstering existing defenses.

Originally, Sifneos (1975, 1983) recommended a dynamic approach for the treatment of neurotics and a supportive approach for the treatment of alexithymics. For all alexithymics, he believed it was necessary to reduce anxiety to avoid regression and a possible complete collapse in functioning. His goal in therapy was to help the client return as quickly as possible to the previously attained precarious level of psychological equilibrium. Sifneos's ideas were supported by Freyberger (1977) who recommended supportive therapy for both primary and secondary

alexithymics. In a more recent publication, Sifneos (1988) holds firmly to his position that primary alexithymics should be treated with a supportive approach. Sifneos believes this procedure is necessary, because individuals with biological defects will never be able to develop the ability to discuss their emotions.

Increasing anxiety with these individuals will only lead to further somatization that could cause life-threatening illness. Secondary alexithymics, on the other hand, could be treated with one of the modified psychoanalytic approaches. For those few individuals who suffer from the alexithymia caused by excessive use of denial and repression, Sifneos says that psychoanalysis may be helpful.

Unlike Sifneos, Miller (1986-87) believes that even organically impaired individuals are capable of change. As evidence, Miller recognizes the positive changes that occur in neuropsychobiological functioning with the exercise of certain behavioral and cognitive patterns (Kandel, 1979). For example, Kandel (1979) discussed the simple processes of habituation and sensitization as models for more complex processes. In the simple processes of habituation and sensitization, learning does not involve a dramatic anatomic rearrangement in the nervous system; no nerve cells or synapses are created or destroyed. Learning changes the functional effectiveness of previously existing synaptic connections by changing calcium influx in the presynaptic terminals. Thus, genetically determined and currently nonfunctioning pathways can be restored by experience, including

the pathways involved in affective functioning. Miller suggests, therefore, that even those individuals with physiological defects may be capable of affective and behavioral change.

Modified Psychoanalytic

Krystal (1979, 1988) has developed a modified approach to psychoanalysis that he advocates for alexithymic individuals. Such a modified approach is needed, Krystal believes, because of the special difficulties in working with alexithymic individuals. He believes that the interaction of these individuals with the therapist will be aloof, bordering on indifferent; these individuals will fail to interact emotionally with the therapist. The lack of emotion is not considered by Krystal as a consciously defensive posture that the client adopts with the therapist; emotion is thought to be deeply buried. There is some evidence that emotion is present in some form, because there is a physiological expression of the emotion. Initially, Krystal suggests that the therapist must depend on reasoning, because the alexithymic individual's emotions do not serve as informative signals. The therapist should first help the patient observe the nature of his alexithymic disturbances. Second, he should help the patient develop "affect tolerance." Affect tolerance is the ability to view emotions as useful signals rather than as horrible dangers to be avoided. Finally, the therapist should help the client gradually begin to talk about his emotions by helping him find words to describe his feelings.

Psychoanalytic Approach

The nature of the alexithymic deficits makes the discussion of using psychoanalysis to treat alexithymia seem counterintuitive. Thoughts related to inner attitudes, feelings, wishes, and drives are almost completely absent from the associations of alexithymics. Instead, alexithymic individuals recount boring details from events in the external environment and from their own behavior. In addition, alexithymic individuals seldom dream, and they have difficulty using their simple, one-sentence dreams to advance the therapy. These individuals can produce more details of the dream, but they cannot access the emotional experience that would expand their conscious thoughts. Despite these obvious obstacles, Taylor (1977) recommends the use of psychoanalytic therapy with alexithymic individuals.

Taylor (1977) suggests that the difficulty that most therapists encounter when attempting to use psychoanalysis to treat alexithymics is that the feelings that the alexithymic client disowns and attributes to the therapist may be redirected back to the client by the therapist. This process would be beneficial in increasing the therapist's understanding of the client, except that the redirected attributions surface as pessimistic beliefs that the client is a mechanical person with a neurophysiological defect who cannot be helped by therapy. The patient evokes feelings of dullness, boredom, and frustration from the therapist that seem to reinforce rationalizations that the client is unsuitable for analysis. By considering the feelings of

dullness, boredom, and frustration as feelings that the therapist has about the client in the context of the therapeutic relationship, the therapist can learn about the maladaptive ways that the alexithymic individual interacts with others. The therapist's feelings toward the client often provide information that enhances the therapist's understanding of the client. Thus, for analysis to be successful with alexithymic individuals, Taylor states that therapists must be aware of and make use of their own feelings toward clients.

According to Taylor, the dull feelings that are evoked in the therapist by the patient's interaction style are analogous to a state of mental starvation. The therapist is uncomfortable with this mental state, and he becomes irritated. Instead of ignoring the irritation or expressing the irritation directly, the therapist should sustain and try to understand the feelings of irritation. By doing so, he can attempt to gain information about the patient's immature, unhealthy interpersonal interactions and explore the patient's beliefs about interpersonal interaction. By collecting this information, the therapist is able to develop appropriate interpretations of the client's experiences.

Taylor (1977) believes that the feelings of alexithymic individuals are neither denied nor absent; the feelings are deeply buried and experienced as highly dangerous and potentially disruptive. Taylor also suggests that a major factor responsible for the reluctance of analysts to use psychoanalytic therapy with alexithymic individuals is that psychotic thought patterns and

interpersonal interactions often emerge when the client begins to identify some of these deeply buried, dangerous feelings.

Conclusions

In conclusion, the psychotherapy debate seems to revolve around the potential presence of organic factors in alexithymia. Sifneos (1988) advocates planning treatment according to the etiologic source of alexithymic symptoms. Organically impaired alexithymics should be treated with supportive approaches, and alexithymia resulting from trauma or defenses should be treated with psychoanalytic or modified psychoanalytic approaches. Krystal (1988) and Taylor (1977) seem to focus more on developmental and interpersonal causes of alexithymia, and recommend psychoanalytic and modified psychoanalytic techniques for alexithymic individuals.

One study has examined the effectiveness of supportive therapy and psychoanalytically-oriented therapy for alexithymic individuals (Freyberger, Kunsebeck, Lempa, Wellmann, & Avenarius, 1985). A group of psychosomatic patients involved in supportive therapy was compared with an untreated control group of psychosomatic patients on measures of anxiety, depression, and general mood. The treated patients showed significant reductions in anxiety and depression, as well as better overall mood. The untreated group, however, showed no changes on the measures. In addition, a group of Crohn patients (i.e., individuals suffering from chronic inflammatory bowel disease) receiving supportive

therapy and medical treatment was compared with a group of Crohn patients receiving both supportive therapy and psychoanalytically-oriented group therapy on measures of psychosomatic disturbance, neuroticism, depression, and anxiety. On all the measures, the supportive therapy and psychoanalytically-oriented therapy group showed significantly more improvement at a 4-month follow-up. Furthermore, all of the gains of the supportive and psychoanalytically-oriented therapy group were not present at assessment at the end of treatment suggesting that treatment gains continued even after termination of treatment. Together, these two investigations suggest that supportive therapy is helpful for alexithymic individuals, but the combination of supportive individual therapy and psychoanalytically-oriented group therapy is more beneficial than supportive therapy alone.

APPENDIX F
EXTENDED LITERATURE REVIEW: EMPIRICAL STUDIES
OF ALEXITHYMIA

EXTENDED LITERATURE REVIEW: EMPIRICAL STUDIES OF ALEXITHYMIA

This appendix provides an overview of the empirical studies of alexithymia. The overview includes studies specifically examining the relationship between eating disorders and alexithymia.

Introduction

The focus in the literature on alexithymia has been predominantly theoretical. Much writing has concentrated on describing potential etiological mechanisms and therapeutic approaches. Part of the reason for this focus has been the historical problem of measuring alexithymia. Many of the measures of alexithymia are psychometrically inadequate or measure only one facet of alexithymia. These measurement difficulties are explored more fully in the methods section of this document. Despite the measurement difficulties, empirical studies of alexithymia offer some understanding of: (a) the distribution and nature of alexithymia in a normal population, (b) the presence of alexithymia in individuals who have other disorders, and (c) the prevalence of alexithymia among college students.

Distribution and Nature of Alexithymia

Alexithymia appears to be a continuous variable, although the literature often mistakenly creates a dichotomy (Feiguine, Jones, & Kassel, 1988; Lesser, 1985). "Data from all the scales suggest

a broad and continuous distribution of subjects" (Krystal, 1988, p. 308). In addition to being continuous, the distribution is normal when alexithymia is measured using the TAS (Loiselle & Dawson, 1988; Taylor, Ryan, & Bagby, 1985).

Alexithymia and Eating Disorders

The relationship between eating pathology and alexithymia has just begun to be explored. To date, few empirical studies have directly examined the relationship between the various eating disorders and alexithymia. Theoretically, however, eating pathology was tied to alexithymic pathology by Bruch as early as 1962. In addition, inclusion of the Interoceptive Awareness subscale, which reflects an individual's lack of confidence in recognizing and accurately identifying feelings, in the development of the Eating Disorders Inventory suggests that individuals with eating disorders probably experience alexithymia (Garner, Olmsted, & Polivy, 1983).

Anorexia Nervosa

One of the first studies of eating disorders and alexithymia examined symbolic functioning, one facet of alexithymia, in 20 anorexic patients (Bourke, Taylor, & Crisp, 1985). Symbolic functioning is the capacity to fantasize or arrange imaginative stimuli into meaningful relationships. Thirty percent of anorexic patients exhibited impaired symbolic functioning on the SAT9. Further, 55% of this same group of anorexics exhibited impaired symbolic functioning after weight gain. In addition, the anorexic

patients' difficulty in labeling feelings was shown by elevated scores on the Interoceptive Awareness subscale of the EDI; these scores did not change with weight gain. There are several implications of these results. First, alexithymia cannot be attributed to the effects of starvation, because there was a tendency for symbolic function to further deteriorate and interoceptive awareness to remain the same with weight gain. Second, there was no correlation between the measures of interoceptive awareness and symbolic function suggesting that these are two distinct facets of alexithymia. Finally, the authors suggest that the reason for the deterioration in symbolic functioning with weight gain is that many anorexics' psychological state worsens when they are stressed by additional weight.

A second controlled study compared 35 anorexic patients with 35 neurotic patients on the MMPI alexithymia subscale and some Rorschach indices suggestive of alexithymia (Pierloot, Houben, & Acke, 1988). The anorexic group scored significantly higher than the control group on the MMPI alexithymia subscale, but only 8 of the 35 individuals reached the cut-off of 14. The cut-off of 14 on the MMPI alexithymia scale was established in a previous study to identify individuals who were alexithymic (Kleiger & Kinsman, 1980). There were no significant differences on the Rorschach indices of alexithymia. Finally, none of the scores on either measure of alexithymia changed with weight gain and treatment in the anorexic group. The authors concluded that the validity of the measures of alexithymia that were used for the study is

questionable. These conclusions are consistent with reviews of the measures of alexithymia that were chosen (Taylor & Bagby, 1988; Taylor, Bagby, Ryan, & Parker, 1990).

Another controlled study examined 20 anorexic patients and 10 patients from somatic clinics (i.e., orthopedics, surgery, and gynecology) on speech sample and questionnaire measures of anxiety and aggression (Engel & Meier, 1988). The results suggest that pure restricting anorexic individuals demonstrate the reduced emotionality (i.e., less anxiety and aggressiveness) typical of alexithymic individuals, whereas more impulsive anorexic (i.e., nonrestricted) individuals did not show a pattern of emotionality consistent with alexithymia. The authors were not clear about the definition of nonrestricted anorexia.

Aono and Kumashiro (1983) examined visual evoked responses (i.e., a physiological measure of brain activity indicating emotional arousal or anxiety) and levels of anxiety on the Taylor Manifest Anxiety Scale for 14 eating disordered individuals at rest and during hyperventilation. The eating disordered individuals were subdivided into typical cases of anorexia nervosa (i.e., females experiencing lack of appetite and emaciation), atypical cases of anorexia nervosa (i.e., males experiencing lack of appetite and emaciation, and females who were overeating and obese following an anorectic period), and cases of bulimia (i.e., individuals who were never emaciated and who overate and were obese). Results showed that typical anorexics showed less manifest anxiety, and their visual evoked responses did not

increase during hyperventilation. These results suggest that typical anorexic individuals demonstrate a state similar to alexithymia. The other two groups, however, showed much manifest anxiety, and the amplitudes of their visual evoked responses increased during hyperventilation. There is some question about the conclusions that can be drawn for bulimic individuals, because this study did not mention whether their "bulimic" individuals had eating binges and used extreme measures such as vomiting in response to the binges. The group that was identified as bulimic may have actually been an obese group.

Bulimia Nervosa

An extensive literature review failed to uncover any empirical studies specifically examining alexithymia or symbolic functioning in a well-defined group of bulimic individuals or individuals with subclinical bulimic symptomatology. However, one article presented two case studies of bulimic adolescents with narcissistic features who were observed to have alexithymic characteristics (Davis & Marsh, 1986). These adolescents were unable to recognize and tolerate certain uncomfortable feelings. In addition, they disowned their uncomfortable feelings (e.g., anger) and suggested that the feelings that they disowned were being expressed by others. Thus, these observations suggest that bulimic symptomatology and alexithymia can be observed together, but the relationship between bulimic symptomatology and alexithymia still needs to be explored empirically.

Obesity

Alexithymia and symbolic functioning have also been examined in obese populations. Morbidly and moderately obese groups were generally more alexithymic and had a higher degree of symbolic function inhibition than normal-weight controls (Legorreta, Bull, & Keily, 1988). In this study, symbolic function was measured using the SAT9, and alexithymia was measured using both the Schalling-Sifneos Personality Scale (SSFS) and the Alexithymia-Provoked Response Questionnaire (APRQ). The results on the two measures of alexithymia were inconsistent; the SSFS found the morbidly obese group significantly more alexithymic than the moderately obese group, whereas the APRQ found equal degrees of alexithymia in both the moderately and the morbidly obese groups. These results call into question the validity of the two measures of alexithymia.

Conclusions

In conclusion, the relationship between eating pathology and alexithymia is still unclear. Although the results of some studies suggest that there is a relationship between alexithymia and anorexia, the results are mixed and based on various measures of alexithymia that are currently unvalidated. The relationship between bulimia and alexithymia is even more uncertain. Two empirical studies may have included bulimic subjects, but they did not identify them clearly (Aono & Kumashiro, 1983; Engel & Meier, 1988). At this time, it would be premature to make conclusions

about the presence or absence of alexithymia in a bulimic population. Finally, the only study that examined alexithymia in obese populations found that obese individuals were generally more alexithymic than normal-weight controls.

Alexithymia and Other Disorders

Although alexithymia was originally associated with individuals suffering from psychosomatic disorders, it is currently recognized in a variety of other populations (Sifneos, 1973; Sifneos, Apfel-Savitz, & Frankel, 1977). Alexithymia has been found in substance abuse disorders, post-traumatic stress disorders, masked depression, chronic pain disorders, and other physical illnesses (e.g., Blumer & Heilbronn, 1981; Krystal, 1982-83; Krystal, Giller, & Cicchetti, 1986; Postpone, 1986; Shipko, Alvarez, & Noviello, 1983; Smith, 1983).

Psychosomatic Disorders

In one of the first empirical studies of alexithymia, Sifneos (1973) compared 25 psychosomatic patients (i.e., individuals with ulcerative colitis, asthma, peptic ulcers, and arthritis) with 25 neurotic controls (i.e., borderline personalities, depressed, hysterical personalities, alcoholics, etc.) on the Beth Israel Hospital Questionnaire, the first interview measure of alexithymia. Sifneos reported descriptive statistics for his groups. The average score for the psychosomatic group was 5.12, and the average score for the neurotic group was 2.88. This early study had some serious methodological flaws. Sifneos did not

report the variance of each of the groups and the statistical significance of the difference between groups. In addition, interpretation of the results is complicated by the heterogeneity of the control group.

Several other more recent studies have examined alexithymia in psychosomatic populations using more appropriate control groups and more extensive statistical analyses. The results of these later studies are consistent with Sifneos's results. One study compared a group of individuals with psychosomatic illnesses (i.e., duodenal ulcers, ulcerative colitis, and irritable colon) with a control group of individuals with other medical illnesses (i.e., gallstones, hernias, and varicose veins) on TAT and Rorschach indices of alexithymia (Keltikangas-Jarvinen, 1986). After certain effects were controlled (e.g., sample bias), significantly greater alexithymia was found in the psychosomatic group. Sriram, Chaturvedi, Gopinath, and Shanmugam (1987) reported that a group of 30 psychogenic pain patients had significantly higher levels of alexithymia than a group of 30 matched controls on a self-report and an interview measure of alexithymia. Finally, Shipko (1982) examined alexithymia in healthy individuals, somaticizers, and individuals with classical psychosomatic illnesses using the Shalling-Sifneos Personality Scale. As he had predicted, Shipko found alexithymia to be significantly more prevalent in somaticizers than in both the group of individuals with classical psychosomatic illnesses and the group of healthy individuals.

Chronic respiratory illness (i.e., asthma, chronic bronchitis/emphysema, tuberculosis) may also be considered a psychosomatic illness. Feiguine and Johnson (1985) reviewed the studies examining alexithymia in individuals with chronic respiratory illnesses. Forty-seven percent of individuals with chronic respiratory illnesses were alexithymic according to the studies that they reviewed. Furthermore, alexithymic asthmatics tended to minimize their self-reports of physical and emotional difficulties that were experienced during acute periods of respiratory distress.

These studies suggest that individuals with psychosomatic illnesses are generally more alexithymic than individuals with other physical illnesses and healthy individuals. These studies also show that not all individuals with psychosomatic illness are alexithymic. It is important, then, to assess for alexithymia on an individual basis in these populations.

Chronic Pain Disorders

In addition to being studied in individuals with psychosomatic illnesses, alexithymia has been examined in individuals with chronic pain disorders. Most of these studies measured alexithymia with the MMPI Alexithymia scale (MMPI-A, Kleiger & Kinsman, 1980). In one of the earliest studies, Mendelson (1982) found that 28 of 60 individuals (47%) attending a chronic pain clinic had scores in the alexithymia range on the MMPI-A. Furthermore, the alexithymic chronic pain patients had a

longer history of pain even though they were no older than the non-alexithymic individuals. Papciak, Feuerstein, Belar, and Pistone (1986-87) used the MMPI-A to examine 208 consecutive outpatients who came to a behavioral medicine clinic complaining of pain as the primary symptom. They found the prevalence of alexithymia among these individuals to be consistent with previous reports of alexithymia in a chronic pain population (e.g., Mendelson, 1982). Furthermore, they found that the alexithymic chronic pain patients were more defensive than the nonalexithymic chronic pain patients and presented themselves in a favorable light, trying to project a picture of "normal" mental health.

In a controlled study, Postpone (1986) examined alexithymia in 18 chronic pain patients, 8 spouses of chronic pain patients, and 19 neurotic psychotherapy patients without pain complaints using the MMPI-A and the Beth Israel Questionnaire (BIQ). He found that pain patients were significantly more alexithymic than the psychotherapy control group, but pain patients were not significantly more alexithymic than their normal spouses. Finally, Kinder and Curtiss (1990) used a cluster analysis of MMPI profiles to subgroup 102 men and 63 women with chronic back pain. For both men and women, the cluster analysis yielded four distinct clusters that are consistent with the findings of other studies (i.e., a hypochondriasis group, a psychopathological group, a somatization reaction group, a reactive depression group for men only, and a normal group for women only). Differences in MMPI-A scale scores were found for male subgroups only, suggesting that

female chronic pain patients are a homogeneous group with respect levels of alexithymia. It may also be possible that the female groups also differ on degree of alexithymia, but the smaller sample size prevented any differences from being statistically significant.

Alexithymia has also been studied in chronic pain patients using various projective techniques (i.e., SAT9, Rorschach). Catchlove, Cohen, Braha, and Demers-Desrosiers (1985) examined alexithymia in 30 chronic pain patients using the SAT9, which assesses symbolic functioning. All subjects demonstrated inhibited symbolic functioning, with older subjects showing greater levels of inhibition of symbolic functioning.

The Rorschach has also been used to assess alexithymia in chronic pain patients (Acklin & Alexander, 1988; Acklin & Bernat, 1987). The first of the two studies employing the Rorschach found that 33 chronic lower back pain patients exhibited alexithymic features and could be distinguished from inpatient depressives on Rorschach indices of alexithymia (Acklin & Bernat, 1987). In addition, the chronic pain group resembled a group of individuals with DSM-III diagnosed personality disorders on Rorschach indices of alexithymia. A second study compared four patient groups (i.e., lower back pain, gastrointestinal, dermatology, and migraine headache patients) and a control group on Rorschach indices of alexithymia (Acklin & Alexander, 1988). The patient groups were more alexithymic than the nonpatients, with the lower back pain

group exhibiting more alexithymic qualities than the other patient groups.

In conclusion, about 45% of chronic pain patients are alexithymic, although a higher percentage may exhibit inhibited symbolic functioning. Those chronic pain patients who are alexithymic have a longer history of pain even though they are not older, and they attempt to maintain a facade of normal mental health. Female chronic pain patients may be a more homogeneous group than male chronic pain patients in regards to alexithymia. Finally, chronic pain patients tend to be more alexithymic than inpatient depressives, individuals in outpatient psychotherapy, and nonpatient controls, but they tend to have levels of alexithymia similar to their spouses and individuals with personality disorders.

Physical Illness

In addition to being found in individuals with psychosomatic illness and chronic pain, alexithymia has been found in individuals with other physical illnesses. One study examined alexithymia using the Shalling-Sifneos Personality Scale in 200 women about to undergo a mammographic examination (Todarello, La-Pesa, Zaka, Martino, & Lattanzio, 1989). The 13 subjects who had breast cancer had significantly more pronounced alexithymic traits than the 187 subjects who did not have breast cancer. A second study compared levels of alexithymia on the BIQ and TAS for 40 rheumatoid arthritis patients and 40 healthy controls matched

on sociodemographic variables (Fernandez, Sriram, Rajkumar, & Chandrasekar, 1989). Eleven rheumatoid arthritis patients were identified as alexithymic. In addition, rheumatoid arthritis patients scored significantly higher on the BIQ and TAS than the controls, and rheumatoid arthritis patients with greater functional impairment had significantly higher alexithymia scores than the controls. These results suggest that individuals with physical illnesses may also be alexithymic.

Post-Traumatic Stress Disorder

Alexithymia has also been studied in individuals with Post-Traumatic Stress Disorder (PTSD). An early study assessed alexithymia in 22 Vietnam veterans with PTSD using the Shalling-Sifneos Personality Scale (Shipko, Alvarez, & Noviello, 1983). Forty-one percent of the veterans assessed were alexithymic. A later study used multiple measures of alexithymia and numerous control groups (Krystal, Giller, & Cicchetti, 1986). Veterans involved in inpatient or outpatient treatment for PTSD, individuals with psychosomatic illness, and individuals with mood disorders were administered the BIQ, the Alexithymia Provoked Response Questionnaire (APRQ), and the MMPI-A. Results show that the inpatient PTSD group and the psychosomatic group had significantly higher levels of alexithymia than the individuals with mood disorders. In addition, the inpatient PTSD group and the psychosomatic group had similar levels of alexithymia, and the outpatient group did not differ from other groups. The authors

suggested that these findings are evidence for alexithymia being on a continuum of severity. Hyer, Woods, Summers, Boudewyns, and Harrison (1990) examined alexithymia in three therapy groups at a Veterans Administration medical center (i.e., a PTSD group, an alcohol abuse group, and a general psychiatric group). They found that alexithymia was more characteristic of the individuals in the PTSD group than the individuals in the other two groups. This is a somewhat surprising finding given the high levels of alexithymia found in many studies examining alexithymia in substance abusers.

In summary, about 41% of veterans with PTSD are alexithymic. In addition, inpatient veterans with PTSD have levels of alexithymia similar to psychosomatic patients, and both groups have higher levels of alexithymia than general psychiatric patients, alcohol abusers, and individuals with mood disorders.

Substance Abuse

The studies on substance abuse and alexithymia have exclusively examined male substance abusers. The earlier studies used the Shalling-Sifneos Personality Scale (SSPS) to measure alexithymia, whereas the more recent studies use the more psychometrically sound Toronto Alexithymia Scale (TAS). Finn, Martin, and Pihl (1987) administered the SSPS to 48 males who had either high, moderate, or low risk for alcoholism based on family history. Those men with a high genetic risk for alcoholism had significantly higher alexithymia scores than the men in the other two groups. Rybakowski, Ziolkowski, Zasadzka, and Brzezinski

(1988) administered the SSFS to 100 men who were actually dependent on alcohol. Seventy-eight of the 100 subjects were alexithymic, which the authors note is a higher percentage than in psychosomatic populations. In addition, the alexithymic alcoholics were younger and had a shorter duration of illness suggesting that alexithymia probably does not result from substance abuse. The final study employing the SSFS to measure alexithymia also assessed depression using the BDI in 90 newly abstinent male alcoholics (Haviland, MacMurray, & Cummings, 1988). The results showed a significant positive correlation between scores on the SSFS and the BDI. The authors suggested that alexithymia may be a method of denying painful affect.

Two other studies used the TAS to examine the relationship between substance abuse and alexithymia. In the first study, white (93), black (19), and Hispanic (13) male substance abusers were administered the TAS and the BDI. Results indicate that 50.4% of the subjects scored in the alexithymic range, and 24% of the subjects scored in the non-alexithymic range (Haviland, Shaw, MacMurray, & Cummings, 1988). The other 25% of the subjects fell in the intermediate range that is identified as neither alexithymic nor nonalexithymic. In addition, the TAS correlated positively with the BDI and paternal history of alcoholism, which supports previous findings (Finn, Martin, & Pihl, 1987; Haviland, MacMurray, & Cummings, 1988). The study also found that blacks tended to be non-alexithymic. Taylor, Parker, and Bagby (1990) found that 50% of 44 newly abstinent male substance abusers were

alexithymic. In addition, alexithymic substance abusers tended to report more somatic complaints and more dysphoria on the BDI.

Several trends appear in the studies of male substance abusers. First, when a valid measure of alexithymia (i.e., the TAS) is used, studies consistently find about 50% of male substance abusers falling into the alexithymic range. Second, alexithymia is positively correlated with family history of alcoholism whether or not the individuals studied are actually abusing alcohol. Third, a number of studies show a significant positive relationship between alexithymia and depression.

Conclusions for Other Clinical Groups

The studies reviewed suggest that across the clinical groups, there are more similarities in the prevalence of alexithymia than differences. Among the studies of psychosomatics, chronic pain patients, individuals with PTSD, and substance abusers, the prevalence of alexithymia was in the range of 40-50%. In addition, these populations generally had higher levels of alexithymia than control groups. Although few studies of individuals with other physical illnesses were done, it appears that these individuals are less alexithymic (i.e., prevalence around 30%) than the other groups reviewed, but more alexithymic than healthy controls.

College Student Populations

Several studies have examined alexithymia in college student populations. In an early study, a positive relationship was found

between alexithymia (measured by the MMPI-A) and somatic complaints (measured by the Cornell Medical Index) for female college students when the tendency to deny problems on self-report measures was controlled (Cooper & Holmstrom, 1984). This relationship did not, however, appear for male subjects. In a later study, 45 undergraduate students were studied to determine the relationship between personality dispositions, capacity for imaginative involvement, and self-reported physical symptoms (Vassend, 1987). Results showed significant positive correlations between somatic complaints (measured by the Giessen Symptoms Check List) and measures of anxiety, depression, and imaginative involvement (measured by the Absorption Scale). In addition, somatic symptoms correlated negatively with a measure of inner directedness. Analyses were carried out for the entire sample in this study, so it is unclear whether the gender differences found by Cooper and Holmstrom (1984) were present in this sample.

Two additional studies examined alexithymia in college students using the Toronto Alexithymia Scale (TAS). In the first study, 333 undergraduate students were administered the TAS, the Private Self-Consciousness scale (which measures the extent to which an individual directs attention inward), and the Patient Self-Disclosure scale (which measures the importance and difficulty of self-disclosure to health care professionals). Results showed that alexithymia was negatively related to degree of inner directedness and positively related to difficulty of self-disclosure to health care professionals. In addition, no

gender differences were found, and 17% of this college sample was alexithymic.

Hendryx, Haviland, and Shaw (1991) administered the TAS, BDI, and STAI to 110 freshman medical students before their first year final examinations. There were significant relationships between anxiety, depression, and the feeling factors on the TAS (i.e., ability to identify feelings and ability to communicate feelings). Furthermore, anxiety was a stronger predictor than depression of the feeling factors on the TAS suggesting that "alexithymia does not appear to be a specific response to depression, but is more likely a response to generalized anxiety or perceived stress, for which depression may be one manifestation" (Hendryx, Haviland, & Shaw, 1991, p. 235). The authors suggested that the two feeling dimensions of the TAS appear to be state dependent, and the other two dimensions on the TAS (i.e., reduced daydreaming and external thinking) appear to operate more like traits.

APPENDIX G

MATERIALS FOR DATA COLLECTION: CONSENT FORM,
QUESTIONNAIRE PACKET, AND LIST OF
PHONE NUMBERS

MATERIALS FOR DATA COLLECTION: CONSENT FORM,
QUESTIONNAIRE PACKET, AND LIST OF
PHONE NUMBERS

This appendix provides a copy of the material used for data collection for this study: a consent form, the questionnaire packet, and a list of phone numbers for counseling centers.

Consent Form

Thank you for volunteering to participate in this study, which is entitled "Alexithymia in Women with Eating Disorder Characteristics." Please read the following form carefully.

I understand that the purpose of this study is to better understand the relationship between eating behaviors and emotions.

I understand that I will be asked to provide information about my background, my eating, my weight, and my emotions.

I understand that my participation in this research is confidential, and that my answers will not be associated with my name. I understand that the data will be available only to the Project Director (Terry Laquatra) and the Project Supervisor.

I understand that my participation is anticipated to last approximately 60 minutes and that I will receive 1 hour of experiment credit. I understand that I may discontinue my participation in this research at any time without penalty if I find any of it personally offensive.

I understand that the Texas Tech University Institutional Review Board (IRB) for the Protection of Human Subjects has been established for the protection of individuals participating in research projects conducted by University personnel. I may contact the IRB by writing them in care of the Office of Research Services, Texas Tech University, Lubbock, Texas 79409, or by calling (806) 742-3884.

I understand that this research is being supervised by Dr. James Clopton who is able to answer questions concerning these procedures. He can be reached by leaving a message at 742-3737.

If this were research that could result in a risk of physical injury, treatment for injury would not necessarily be available at Texas Tech University or the Student Health Center, nor is there necessarily any insurance to cover any such injury. Financial compensation for any such injury must be provided through the participant's own insurance program. I understand that it is my right to ask if there is any risk of injury due to this study. Further information about these matters may be obtained from Dr. Robert M. Sweazy, Vice Provost for Research, 742-3884, Room 203 Holden Hall, Texas Tech University, Lubbock, Texas 79409-1035.

Again, thank you for your participation in this study.

Signature of participant _____ Date _____

Signature of Project Director _____ Date _____

Questionnaire Packet

This research project is concerned with persons, their eating behaviors, and their emotions. We are interested in learning about you, your eating attitudes and behaviors, and your emotional experiences.

The questionnaires have been carefully designed to measure specific behaviors, attitudes, and feelings. From your scores and those of other people, we will perform a variety of statistical analyses. From the data provided by you and other people, we will be able to learn how eating behaviors and emotions are interrelated.

Because this research is scientific in nature, it requires large numbers of people to draw scientific generalizations. It is not meant to describe particular individuals. In fact, your responses will remain completely anonymous. Your name will not be associated with your responses in any way. There are no "right" answers; the best answer is the one that is most correct for you.

IMPORTANT: Please make sure that you complete all of the items. If any items are missing, we cannot use your questionnaire. However, if you find any part of this questionnaire offensive, you do not have to finish it.

DO NOT MARK THE QUESTIONNAIRE. PLEASE MARK YOUR RESPONSES ON THE ANSWER SHEET THAT IS PROVIDED. PLEASE SELECT ONLY ONE RESPONSE PER QUESTION.

EDI

This set of questions measures a variety of attitudes, feelings, and behaviors. Some of the items relate to food and eating. Others ask you about your feelings about yourself. Read each question and fill in the letter on the answer sheet which best applies to you. Please answer each question very carefully.

A = Always
B = Usually
C = Often
D = Sometimes
E = Rarely
F = Never

1. I eat sweets and carbohydrates without feeling nervous.
2. I think my stomach is too big.
3. I wish that I could return to the security of childhood.
4. I eat when I am upset.
5. I stuff myself with food.
6. I wish that I could be younger.
7. I think about dieting.
8. I get frightened when my feelings are too strong.
9. I think that my thighs are too large.
10. I feel ineffective as a person.
11. I feel extremely guilty after eating.
12. I think that my stomach is just the right size.
13. Only outstanding performance is good enough in my family.
14. The happiest time in life is when you are a child.
15. I am open about my feelings.
16. I am terrified of gaining weight.
17. I trust others.
18. I feel alone in the world.

19. I feel satisfied with the shape of my body.
20. I feel generally in control of things in my life.
21. I get confused about what emotion I am feeling.
22. I would rather be an adult than a child.
23. I can communicate easily with others.
24. I wish I were someone else.
25. I exaggerate or magnify the importance of weight.
26. I can clearly identify what emotion I am feeling.
27. I feel inadequate.
28. I have gone on eating binges where I have felt that I could not stop.
29. As a child, I tried very hard to avoid disappointing my parents and teachers.
30. I have close relationships.
31. I like the shape of my buttocks.
32. I am preoccupied with the desire to be thinner.
33. I don't know what's going on inside me.
34. I have trouble expressing my emotions to others.
35. The demands of adulthood are too great.
36. I hate being less than best at things.
37. I feel secure about myself.
38. I think about bingeing (overeating).
39. I feel happy that I am not a child anymore.
40. I get confused as to whether or not I am hungry.
41. I have a low opinion of myself.
42. I feel that I can achieve my standards.
43. My parents have expected excellence of me.

44. I worry that my feelings will get out of control.
45. I think my hips are too big.
46. I eat moderately in front of others and stuff myself when they're gone.
47. I feel bloated after eating a small meal.
48. I feel that people are happiest when they are children.
49. If I gain a pound, I worry that I will keep gaining.
50. I feel that I am a worthwhile person.
51. When I am upset, I don't know if I am sad, frightened, or angry.
52. I feel that I must do things perfectly or not do them at all.
53. I have the thought of trying to vomit in order to lose weight.
54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).
55. I think that my thighs are just the right size.
56. I feel empty inside (emotionally).
57. I can talk about personal thoughts or feelings.
58. The best years of your life are when you become an adult.
59. I think my buttocks are too large.
60. I have feelings I can't quite identify.
61. I eat or drink in secrecy.
62. I think that my hips are just the right size.
63. I have extremely high goals.
64. When I am upset, I worry that I will start eating.

TAS

Using the scale provided as a guide, indicate how much you agree or disagree with each of the following statements by marking the letter on the answer sheet that corresponds with your choice. Give only one answer for each statement.

- A = Strongly disagree
- B = Moderately disagree
- C = Neither disagree nor agree
- D = Moderately agree
- E = Strongly agree

- 65. When I cry, I always know why.
- 66. Daydreaming is a waste of time.
- 67. I wish I were not so shy.
- 68. I am often confused about what emotion I am feeling.
- 69. I often daydream about the future.
- 70. I seem to make friends as easily as others do.
- 71. Knowing the answers to problems is more important than knowing the reasons for the answers.
- 72. It is difficult for me to find the right words for my feelings.
- 73. I like to let people know where I stand on things.
- 74. I have physical sensations that even doctors don't understand.
- 75. It's not enough for me that something gets the job done; I need to know why and how it works.
- 76. I'm able to describe my feelings easily.
- 77. I prefer to analyze problems rather than just describe them.
- 78. When I am upset, I don't know if I am sad, frightened, or angry.
- 79. I use my imagination a great deal.
- 80. I spend much time daydreaming whenever I have nothing else to do.
- 81. I am often puzzled by sensations in my body.

- 82. I daydream rarely.
- 83. I prefer to just let things happen rather than to understand why they turned out that way.
- 84. I have feelings that I can't quite identify.
- 85. Being in touch with emotions is essential.
- 86. I find it hard to describe how I feel about people.
- 87. People tell me to describe my feelings more.
- 88. One should look for deeper explanations.
- 89. I don't know what's going on inside me.
- 90. I often don't know why I am angry.

Background and Personal History

On the answer sheet, please fill in the response that answers the question accurately for you. Select only one answer per question.

Demographic information

91. My year in school is:
A. Freshman
B. Sophomore
C. Junior
D. Senior
92. My ethnic heritage is:
A. Black
B. White (non-Hispanic)
C. Hispanic
D. Oriental
E. Other
93. My family's total income last year was:
A. \$15,000 or less
B. \$15,000 to \$25,000
C. \$25,000 to \$35,000
D. \$35,000 to \$50,000
E. \$50,000 and up
94. I was raised in an area that was:
A. Farm or small village
B. Town of 10,000 or less
C. Town of 10,000 to 50,000
D. City of 50,000 to 200,000
E. City of 200,000 or more
95. The religious affiliation of my family is:
A. Protestant
B. Catholic
C. Jewish
D. Other
E. No affiliation

Weight Control and Eating History

96. At your current weight, do you feel that you are:
A. Extremely thin
B. Somewhat thin
C. Normal weight
D. Somewhat overweight
E. Extremely overweight

97. At a previous weight that is most different from your current weight, how did you feel:
- A. Extremely thin
 - B. Somewhat thin
 - C. Normal weight
 - D. Somewhat overweight
 - E. Extremely overweight
98. At your current weight, how do others perceive you?
- A. Extremely thin
 - B. Somewhat thin
 - C. Normal weight
 - D. Somewhat overweight
 - E. Extremely overweight
99. At a previous weight that is most different from your current weight, how did others perceive you?
- A. Extremely thin
 - B. Somewhat thin
 - C. Normal weight
 - D. Somewhat overweight
 - E. Extremely overweight
100. How did you perceive your weight as a child (between the ages of 6-12)?
- A. Extremely thin
 - B. Somewhat thin
 - C. Normal weight
 - D. Somewhat overweight
 - E. Extremely overweight
101. To what extent were you teased about your weight as a child?
- A. Not at all
 - B. Slightly
 - C. Moderately
 - D. Very much
 - E. Extremely
102. Currently, how satisfied are you with the shape of your body?
- A. Extremely satisfied
 - B. Somewhat satisfied
 - C. Neither satisfied nor dissatisfied
 - D. Somewhat dissatisfied
 - E. Extremely dissatisfied

103. Currently, how satisfied are you with your appearance?
- A. Extremely satisfied
 - B. Somewhat satisfied
 - C. Neither satisfied nor dissatisfied
 - D. Somewhat dissatisfied
 - E. Extremely dissatisfied
104. Have you ever been on a strict diet (less than 1200 calories a day)?
- A. No
 - B. Yes
105. How often do you engage in strict dieting (under 1200 calories per day)?
- A. Never
 - B. 1-2 times a month
 - C. 1-2 times a week
 - D. 3-5 times a week
 - E. Daily
106. How long have you been going on strict diets (under 1200 calories per day) due to concern over your body size or weight?
- A. I don't restrict my food intake
 - B. Beginning within the last week
 - C. Beginning within the last month
 - D. Beginning within the last year
 - E. Beginning over a year ago
107. When was the last time you went on a strict diet (under 1200 calories per day)?
- A. I've never been on a strict diet
 - B. Over a year ago
 - C. Within the last year
 - D. Within the last month
 - E. Within the last week
108. Have you ever fasted (skipped meals for an entire day)?
- A. No
 - B. Yes
109. How often do you engage in fasting (skipping meals for an entire day)?
- A. Never
 - B. 1-2 times a month
 - C. 1-2 times a week
 - D. 3-5 times a week
 - E. Daily

110. When was the last time you fasted (skipped meals for an entire day)?
- A. I've never fasted
 - B. Over a year ago
 - C. Within the last year
 - D. Within the last month
 - E. Within the last week
111. Do you use exercise to control your weight?
- A. No
 - B. Yes
112. How often do you engage in vigorous exercise (at least 20 minutes of aerobic exercise - e.g., jogging, brisk walking, swimming, bicycling)?
- A. Once a month or less
 - B. 2-4 times a month
 - C. 2-4 times a week
 - D. 5-7 times a week
 - E. More than once a day
113. When was the last time you engaged in vigorous exercise (at least 20 minutes of aerobic exercise)?
- A. I've never engaged in vigorous exercise
 - B. Over a year ago
 - C. Within the last year
 - D. Within the last month
 - E. Within the last week
114. Have you ever had an episode of eating a large amount of food in a short space of time (an eating binge)?
- A. No
 - B. Yes
115. On the average, how often do you binge eat?
- A. Never
 - B. 1-2 times a month
 - C. 1-2 times a week
 - D. 3-5 times a week
 - E. Once or more each day
116. How often do you feel out of control when you binge eat?
- A. I don't binge eat
 - B. Rarely
 - C. Sometimes
 - D. Often
 - E. Always

117. How long have you been binge eating?
- A. I don't binge eat
 - B. Beginning within the last week
 - C. Beginning within the last month
 - D. Beginning within the last year
 - E. Beginning over a year ago
118. When was the last time you binge ate?
- A. I've never engaged in binge eating
 - B. Over a year ago
 - C. Within the last year
 - D. Within the last month
 - E. Within the last week
119. Have you ever spit out food after eating in order to get rid of the food eaten?
- A. No
 - B. Yes
120. Have you ever made yourself vomit after eating to get rid of the food eaten?
- A. No
 - B. Yes
121. How often do you engage in vomiting to control weight?
- A. Never
 - B. 1-2 times a month
 - C. 1-2 times a week
 - D. 3-5 times a week
 - E. One or more times a day
122. How long have you been engaging in self-induced vomiting?
- A. I don't engage in self-induced vomiting
 - B. Beginning within the last week
 - C. Beginning within the last month
 - D. Beginning within the last year
 - E. Beginning over a year ago
123. When was the last time you self-induced vomiting to control weight?
- A. I've never self-induced vomiting for weight control
 - B. Over a year ago
 - C. Within the last year
 - D. Within the last month
 - E. Within the last week
124. Have you ever used laxatives to control your weight?
- A. No
 - B. Yes

125. How often do you use laxatives for weight control?
- A. Never
 - B. 1-2 times a month
 - C. 1-2 times a week
 - D. 3-5 times a week
 - E. One or more times a day
126. How long have you been using laxatives for weight control?
- A. I don't use laxatives for weight control
 - B. Beginning within the last week
 - C. Beginning within the last month
 - D. Beginning within the last year
 - E. Beginning over a year ago
127. When was the last time you used laxatives for weight control?
- A. I've never used laxatives for weight control
 - B. Over a year ago
 - C. Within the last year
 - D. Within the last month
 - E. Within the last week
128. Have you ever used diuretics (water pills) to control your weight?
- A. No
 - B. Yes
129. How often do you use diuretics to control your weight?
- A. Never
 - B. 1-2 times a month
 - C. 1-2 times a week
 - D. 3-5 times a week
 - E. Once a day or more
130. How long have you been using diuretics for weight control?
- A. I don't use diuretics for weight control
 - B. Beginning within the last week
 - C. Beginning within the last month
 - D. Beginning within the last year
 - E. Beginning over a year ago
131. When was the last time you used diuretics for weight control?
- A. I've never used diuretics for weight control
 - B. Over a year ago
 - C. Within the last year
 - D. Within the last month
 - E. Within the last week

132. How much does your eating and general concerns about eating interfere with your personal relationships?
- A. Never
 - B. Rarely
 - C. Sometimes
 - D. Often
 - E. Always
133. How much does your eating and general concerns about eating interfere with your studies?
- A. Never
 - B. Rarely
 - C. Sometimes
 - D. Often
 - E. Always
134. What was your grade point average last semester?
- A. 3.25 - 4.0
 - B. 2.5 - 3.24
 - C. 2.0 - 2.49
 - D. 1.0 - 1.99
 - E. Below 1.0

Personal History

135. How old were you when you began menstruating?
- A. 8-10
 - B. 11-12
 - C. 13-15
 - D. 15-17
 - E. I've never menstruated
136. How regular are your menstrual cycles?
- A. Fairly regular (Same number of days +3)
 - B. Somewhat irregular (Variation 4-10 days)
 - C. Very irregular (Variation greater than 10 days)
 - D. I've stopped menstruating
 - E. I've never menstruated
137. How many times have you skipped your period for 3 months or more when you were not pregnant?
- A. Never
 - B. One or two times
 - C. Three or four times
 - D. Five or six times
 - E. More than six times

138. How often do you use alcohol?
- A. Never or less often than once each year
 - B. Every couple of months
 - C. Every couple of weeks
 - D. On a weekly basis
 - E. More frequently than weekly
139. How often do you use recreational drugs?
- A. Never or less often than once each year
 - B. Every couple of months
 - C. Every couple of weeks
 - D. On a weekly basis
 - E. More frequently than weekly
140. Since high school, have you stolen anything?
- A. No
 - B. Yes
141. In general, how often have you thought about committing suicide?
- A. Never
 - B. Almost never
 - C. Occasionally/sometimes
 - D. Frequently/often
 - E. All the time
142. Have you ever made a suicide attempt?
- A. No
 - B. Yes
143. Have you ever received outpatient therapy or counseling for anorexia or bulimia?
- A. No
 - B. Yes
144. Have you ever received inpatient therapy or counseling for anorexia or bulimia?
- A. No
 - B. Yes
145. Have you ever received outpatient therapy or counseling for some difficulty other than anorexia or bulimia?
- A. No
 - B. Yes
146. Have you ever received inpatient therapy or counseling for some difficulty other than anorexia or bulimia?
- A. No
 - B. Yes

Code # _____

Please provide the information requested in the space provided.

147. If you have received outpatient therapy or counseling, please describe the difficulty that you were having at the time you sought counseling?

148. If you have received inpatient therapy or counseling, please describe the difficulty that you were having at the time you sought inpatient treatment?

149. Please fill in the following to the best of your knowledge:

Age _____ (years)

Height _____' _____" (feet and inches)

Weight _____ (pounds)

Desired weight _____ (pounds)

List of Counseling Center Phone Numbers

Sometimes the content of the questions asked in research studies raises questions or elicits strong feelings. If you would like to talk to a counselor about any feelings that may have been aroused for you while completing these questions, the following places provide counseling.

The Counseling Center (West Hall) provides free short-term counseling to Texas Tech students (742-3674).

The Texas Tech Psychology Clinic (Psychology Building) provides therapy on a sliding fee scale with a 25% reduction to Texas Tech students (742-3737).