

1987

# Eating disorders: assessment of psychological, physiological and behavioral characteristics

Jean Kay Lundholm  
*Iowa State University*

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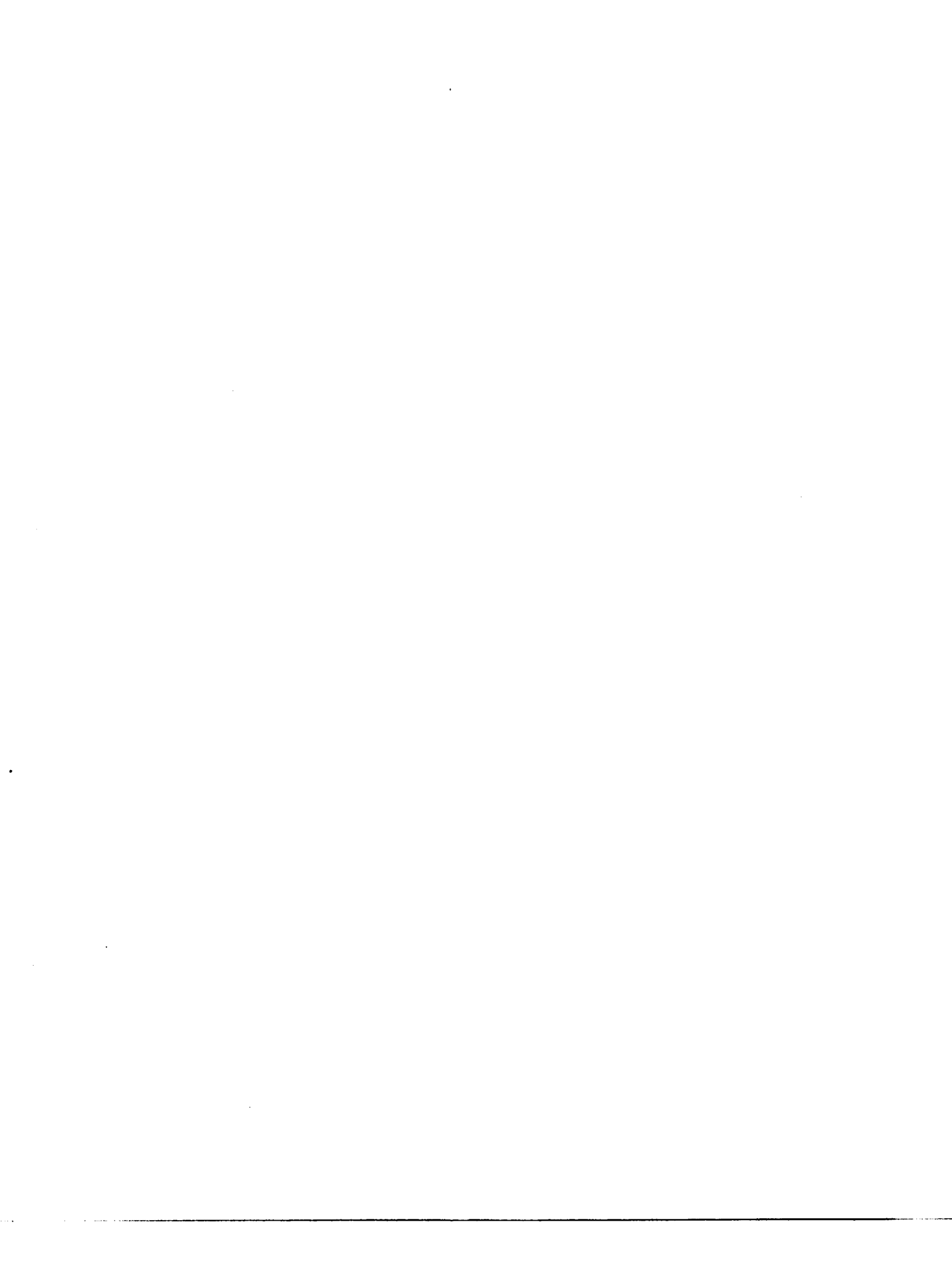
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**Eating disorders: Assessment of psychological, physiological, and behavioral characteristics**

**Lundholm, Jean Kay, Ph.D.**

**Iowa State University, 1987**

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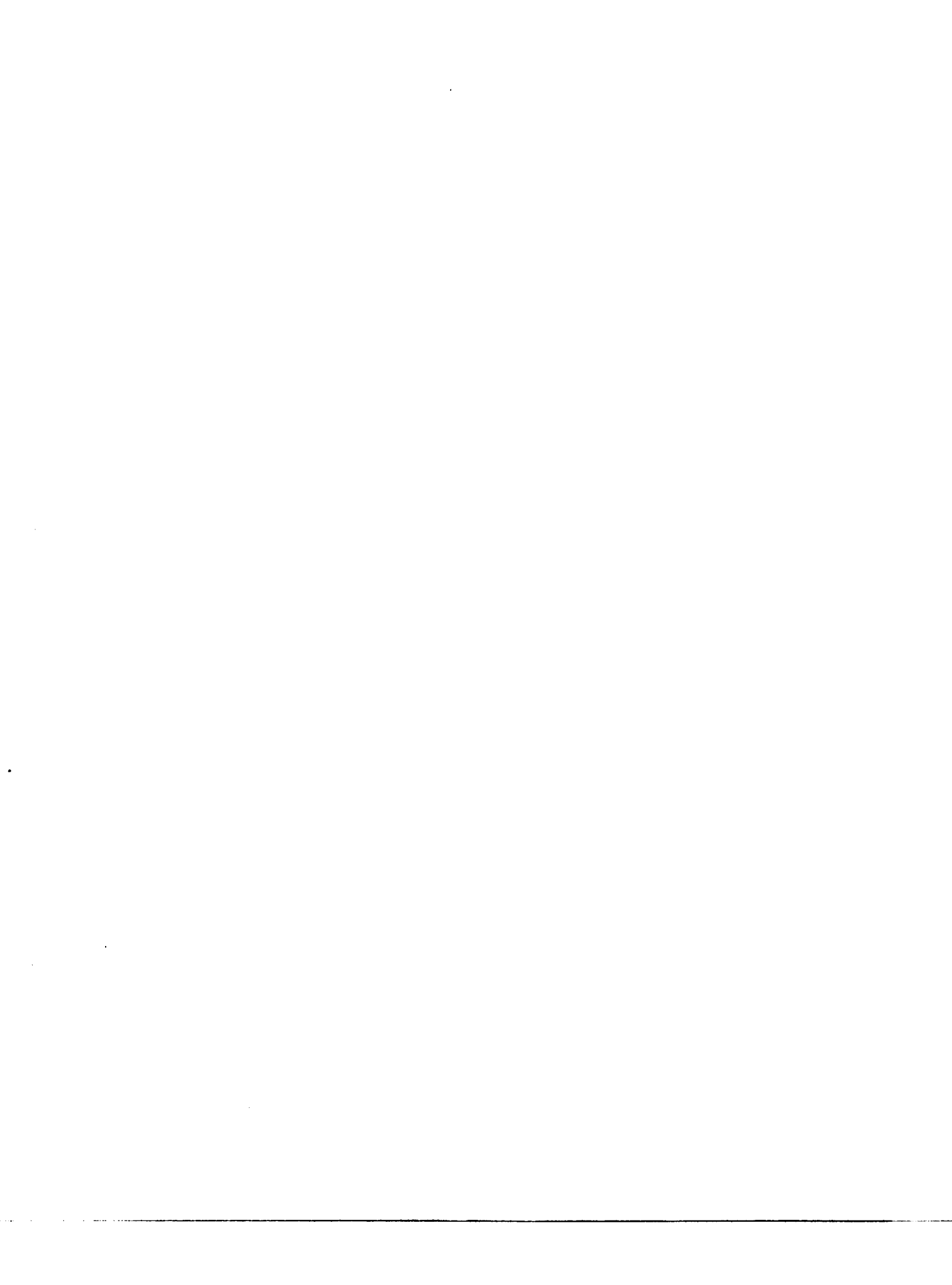


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**Eating disorders: Assessment of psychological,  
physiological, and behavioral characteristics**

by

**Jean Kay Lundholm**

**Dissertation Submitted to the  
Graduate Faculty in Partial Fulfillment of the  
Requirements for the Degree of  
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DEDICATION

Although I recognize that it is not customary to dedicate a dissertation, I would like to beg this indulgence in dedicating this work to a mentor and friend, Dr. Dominick D. Pellegrino, for helping me turn stumbling blocks into stepping stones.

## GENERAL INTRODUCTION

The eating disorders of anorexia nervosa and bulimia are increasing in frequency and are now being regarded as public health problems among adolescent and young adult females (Carter & Eason, 1983; Katzman, Wolchik & Brauer, 1984; Pope, Hudson, Yurgelun-Todd & Hudson, 1984). As a result, counselors/therapists are being called upon to recognize, to offer assistance with, and/or to help prevent these problems.

Since these disorders are multifaceted, counselors/therapists need to understand and recognize the numerous characteristics which may contribute to the development and maintenance of these disorders. Once these characteristics are identified, preventive and treatment interventions may be beneficially developed.

### Explanation of the Alternate Dissertation Format

The organization of this dissertation follows the alternate format approved by the Graduate College of Iowa State University. This alternate format specifies a dissertation with (a) a research overview, (b) one or more chapters constituting complete research prepared for submittal for publication, and (c) a brief summary of the findings and implications of the research.

### Theoretical Orientation

#### Diagnostic Criteria

Anorexia nervosa. The most frequently used criteria for the diagnosis of anorexia nervosa are the Feighner et al. criteria (Feighner, Robins, Guze, Woodruff, Winokur & Munoz, 1972) and the criteria listed in the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM III) (American Psychiatric Association, 1980). The Feighner et al.



(1972) criteria include an onset prior to 25 years of age; a weight loss of at least 25% of original body weight; a distorted attitude toward eating, food or weight; no known medical or psychiatric illness that could account for the anorexia and weight loss; and at least two of the following: (1) amenorrhea, (2) lanugo, (3) bradycardia, (4) periods of overactivity, (5) episodes of bulimia, or (6) vomiting. The DSM III criteria include an intense fear of becoming obese, a disturbance of body image, a weight loss of at least 25% of original body weight, a refusal to maintain a normal body weight for age and height, and the absence of any physical illness that would account for the weight loss.

Both sets of criteria have been criticized for requiring that no known physical illness can account for the weight loss, and that the loss must be at least 25% of original body weight. There is always a chance that some physical weight-losing disease might coexist. The criteria of a specific weight loss fail to include a discussion of how the weight loss should be calculated and fail to consider individuals who are markedly overweight or thin at onset or who can significantly distort their weight by promoting dehydration or rehydration (Askevold, 1983). Insisting upon such a 25% weight loss may also result in underdiagnosis of milder cases that could benefit from early intervention (Smith, 1984).

The Feighner et al. (1972) criteria have been criticized for requiring a specific age of onset, that no other psychiatric disorder be evident, and permitting combinations of unrelated behaviors to describe a specific entity. Related to requiring an age of onset prior to age 25, studies have shown that the onset of anorexia is not uncommon in the late '20s throughout the '30s (Garfinkel, Moldofsky & Garner, 1980) or even later (Launer, 1978). Related to the requirement that no other known psychiatric disorder be evident, it has been shown that some anorexics meet the criteria for major depression (Gershon, Hamovit, Schreiber, Dibble, Kaye, Nurnberger, Andersen & Ebert, 1983) or personality disorders such as schizoid, borderline or histrionic (Bram, Eger & Halmi,

1982; Strober, 1981a). Using the DSM III criteria, the multiaxial system of classification allows for the possibility of more than one diagnosis on Axis I and an additional diagnosis of personality disorder on Axis II. Finally, no logical connection exists between the manifestations of amenorrhea, lanugo, bradycardia, overactivity, bulimia and vomiting. Individuals who use dieting as well as those who use vomiting are given the same diagnosis, when in fact they may be very different from each other (Askevold, 1983; Lowenkopf, 1982).

The DSM III criteria (American Psychiatric Association, 1980) are criticized for requiring a fear of becoming obese and for omitting amenorrhea. Anorexia most commonly occurs in early adolescents who have no fears related to obesity (Askevold, 1983). Since amenorrhea occurs in 1/3 of the patients with anorexia, it should thus be included as a criterion (Falk & Halmi, 1982; Russell & Beardwood, 1970).

As a result of these criticisms, two other diagnostic criteria have been offered for anorexia. One is by Askevold (1983) and the other is by Halmi (1985). The Askevold (1983) criteria include a determination to diet which develops into a determination to reach extreme thinness; amenorrhea; a drive quality to the maintenance of the anorexia; an active avoidance of sexuality; and a disturbance in body image. The Halmi (1985) criteria include an intense fear of becoming obese; a distorted body image; refusal to maintain a minimal normal body weight for age and height; and amenorrhea. An additional diagnosis of Type I is provided for those patients who solely restrict food intake and do not binge or purge. A Type II is given to those patients who restrict food intake and purge but do not binge. A diagnosis of bulimia nervosa is given to those patients who binge and purge and who may restrict intake as well. These criteria are some of the first to give additional diagnoses based on consummatory and/or weight control behaviors.

**Bulimia.** The most frequently used criterion for a diagnosis of bulimia are the DSM III criteria (American Psychiatric Association, 1980) or the revised Russell criteria (Russell, 1983). The DSM III criteria include recurrent episodes of rapid food consumption, awareness of an abnormal eating pattern, depressed mood following eating binges, eating episodes not due to anorexia nervosa or any known physical illness, and at least three of the following: (1) consumption of high-calorie foods during a binge; (2) inconspicuous eating during a binge; (3) termination of the binge due to abdominal pain, social interruption, or self-induced vomiting; (4) repeated attempts to lose weight by dieting, vomiting, or abuse of cathartics or diuretics; and/or (5) frequent weight fluctuations greater than 10 pounds due to fasting and bingeing. The Russell (1983) criteria include a preoccupation with food; behaviors aimed at counteracting the "fattening" effects of food; a psychopathology resembling that of classical anorexia nervosa; and a previous overt or cryptic episode of anorexia.

The DSM III criteria have been criticized for requiring that the bulimic episodes not be due to anorexia or any known physical disorder, for defining the binge as a consumption of a large amount of food in a period usually less than 2 hours, and for failing to require purging behavior. While bulimia is not supposed to be diagnosed if the episodes are due to anorexia, symptoms of bulimia frequently occur among the severely underweight (Beumont, George & Smart, 1976; Strober, 1981b). This criterion limits the diagnosis of the syndrome to those clients who are at or above normal body weight. Also, although the bulimic episodes are not due to any known physical disorders, there are indications that some bulimics may have a predisposing neurological condition (Rau & Green, 1975). Related to the definition of a binge, researchers reported that it is not the amount of food that matters but rather how the episode is experienced (Fairburn, 1982; Johnson, Lewis & Hagman, 1984) and that some episodes last longer than 2 hours (Abraham & Beumont, 1982; Mitchell, Pyle & Eckert, 1981). Finally, related to the failure to require purging behavior for a diagnosis,

several researchers believe both binge eating and self-induced vomiting are essential clinical features (Dunn & Ondercin, 1981; Hawkins & Clement, 1980; Yager, 1981) while others regard vomiting as a severe but not a necessary component (Halmi, Falk & Schwartz, 1981).

Both sets of criteria fail to differentiate between those who only binge from those who binge and purge and to provide an index of behavior severity. Although bingeing behavior is frequently indentified in patients with an otherwise stable personality, the combination of bingeing and purging is rarely identified in a stable personality (Pyle, Mitchell & Eckert, 1981; Russell, 1979). Also, many adolescent and young adult women experience episodes of bulimia (Lundholm & Anderson, 1986), yet only those who both overeat once a week or more and engage in purging behavior, resemble patients with this disorder (Pyle, Mitchell, Eckert, Halvorson, Neuman & Goff, 1983).

As a result of these criticisms, two other sets of diagnostic criteria for bulimia and a combined revision of the DSM III for anorexia and bulimia have been offered. One set of criteria for bulimia is suggested by Halmi (1985) as a revision of the current DSM III. The other is suggested by Fairburn and Garner (1986). The Halmi (1985) revision includes recurrent episodes of binge eating; awareness of an abnormal eating pattern; binge eating at least an average of twice per week for a chronicity of 3 months; and at least three of the following: (1) consumption of high-caloric foods during a binge; (2) inconspicuous eating during a binge; (3) termination of binge episodes by abdominal pain, social interruption or self-induced vomiting; and/or (4) repeated attempts to lose weight by restricted diets, vomiting or use of cathartics or diuretics. The Fairburn and Garner (1986) criteria include the subjective loss of control over eating and associated bulimic episodes; behavior designed to control body weight; and extreme concerns about shape and weight.

The American Psychiatric Association (1985) has recently suggested a revision of their criteria which include criteria for bulimic disorder,

anorexia nervosa, and a residual category for patients who do not meet the criteria for a specific eating disorder. The criteria for bulimic disorder include recurrent episodes of binge-eating; a feeling of lack of control during the binge-eating; the regular use of self-induced vomiting, laxatives, or rigorous dieting or fasting in order to counteract the effects of binge-eating; and a minimum average of 2 binge-eating episodes per week for at least 3 months. The criteria for anorexia nervosa include an intense fear of becoming obese, even when underweight; a disturbance in body image; refusal to maintain body weight over a minimal normal weight for age and height leading to the maintenance of body weight 15% below expected; and in females the absence of at least 3 consecutive menstrual cycles.

Although the new set of diagnostic criteria is an improvement because the definition of bulimia is more succinct, and the behaviors designed to control body weight are made an essential diagnostic feature, three problems still exist. The diagnosis of bulimia may still be made in the absence of the characteristic concerns about shape and weight, the confusion over the meaning of the word bulimia may still continue, and the relationship between the diagnosis of anorexia and bulimia is still not addressed (Fairburn & Garner, 1986). Since 30% or more of the anorexic population manifest bulimic symptoms (Casper, Eckert, Halmi, Goldberg & Davis, 1980); almost half of the bulimic population has at one time been diagnosed as anorexic (Fairburn, 1981); and diagnosed patients frequently move between the syndromes of anorexia and bulimia at different times, (Vandereycken & Pierloot, 1983) a key focus of future research is that of examining the relationship between anorexia and bulimia.

### Rationale for the Research

After reviewing the diagnostic criteria for anorexia and bulimia, it becomes evident that certain common behaviors and attitudes are prevalent in both disorders. Anorexics and bulimics report fasting (Pyle et al. 1981), stringent dieting (Wooley & Wooley, 1982), preoccupation with food (Fairburn, 1980; Herzog, 1982a,b), and binge eating (Strober, Salkin, Burroughs & Morrell, 1982).

Studies of nonclinical samples have shown similar behaviors. Binge eating is reportedly affecting as many as 19-20% of college women (Halmi, Falk & Schwartz, 1981; Wooley & Wooley, 1982). Dieting is more wide-spread (Button & Whitehouse, 1981; Thompson & Schwartz, 1982). Reports on college students have shown that approximately 11% of the females are on diets and that another 70% are trying to limit food intake (Jakobovits, Halstead, Kelley, Roe & Young, 1977). In addition, college females report restrained eating, binge eating, and self-criticism of their physical appearance (Hawkins & Clement, 1980; Lundholm & Anderson, 1986).

A higher incidence of these behaviors is also observed among subcultures in which optimal weight is specified. Prime examples include dancers (Druss & Silverman, 1979), athletes (Crago, Yates, Beulter & Arizmendi, 1985; Yates, Leehey & Shisslak, 1983), and cheerleaders (Lundholm & Littrell, 1986).

Given the reports of increasing incidence of disordered-eating patterns among females, it seemed necessary and appropriate to examine the behaviors and attitudes common to these patterns. In particular, the aim of this dissertation was to identify and examine psychological, physiological, and behavioral aspects which were thought to contribute to the development and maintenance of disordered-eating patterns. Once these aspects are identified, specific preventive and treatment interventions may be beneficially developed.

## Research Overview

This research overview will cover the following: age of onset, weight and weight history, theories related to disordered eating, behaviors used to counteract weight gain, and psychological aspects related to disordered eating.

### Age of Onset

The onset of anorexia usually occurs between 12–25 years of age and lessens as subjects move through their '20s (Crisp, Hsu & Harding, 1980a; Strober & Goldenberg, 1981). The cases of later age of onset often include bulimic features (Hood, Moore & Garner, 1982; Small, Madero, Gross, Teagno, Leib & Ebert, 1981).

Bulimia is much more common than anorexia during late adolescence and young adult years (Herzog, 1982a). The age range most often cited for the onset of bulimic symptoms is 18–25 years of age (Fairburn & Cooper, 1982a,b; Mitchell, Hatsukami, Eckert & Pyle, 1985). Since bulimics are older than restrictors (those who restrict food intake and do not binge or purge); and since anorexics with bulimic features tend to be older than restrictors (Garner, Garfinkel, O'Shaughnessy, 1985a; Gwirtsman, Roy-Byrne, Yager & Gerner, 1983); it is thought that bulimia may represent the final stage of chronic anorexia (Lowenkopf, 1982; Strober et al. 1982).

### Weight and Weight History

Bulimics and anorexics with bulimic tendencies are slightly overweight or heavy within the normal weight range (Fairburn & Cooper, 1984a,b; Garfinkel & Garner, 1984; Garner, Olmsted & Garfinkel, 1985b). Many report a history of premorbid obesity (Beumont, Chambers, Rouse, Abraham, 1981b; Herzog, 1982a,b). A family history of maternal obesity (Grace, Jacobson & Fullager, 1985) or paternal obesity (Garner et al. 1985b) is also frequently reported. Bulimics may have inherited a tendency towards obesity and a normal body weight for many of them may be too low

(Garner, 1985; Garner et al. 1985a).

### Theories Related to Disordered Eating

Of the major theories related to disordered eating, four will be discussed in this review. These are the psychosomatic theory, the externality theory, the set-point theory, and the restraint theory.

Psychosomatic theory. The psychosomatic theory was one of the earliest developed to account for disordered eating. This theory was proposed by Kaplan and Kaplan (1957) who believed that overeating was a coping strategy used by obese individuals to reduce emotionally upsetting feelings such as anxiety, depression, hostility, and loneliness.

Bruch (1961, 1964, 1973) was one of the main advocates of the psychosomatic theory and also believed that overeating was used to reduce emotional upset. Additionally, she thought overeating occurred because obese individuals were unable to differentiate among internal arousal states and feelings of hunger and satiety.

Externality theory. Stimulated by Bruch's suggestion that obese persons were unable to differentiate among internal arousal states, Schachter and colleagues examined this theory (Schachter, Goldman & Gordon, 1968). In their study they observed that neither preloads (food provided to the subjects that was thought to produce internal feelings of satiety) nor threat of shock affected amounts eaten by obese individuals. They concluded that internal arousal states did not seem to be related to overeating.

Since Schachter did not find support for the Bruch interpretation of the psychosomatic theory, he formulated his own theory, the externality theory (Schachter, 1971), to account for differences in eating behaviors of obese and normal-weight individuals. He believed that obese individuals were hyperresponsive to external food-related cues. Cues such as taste, sight, and availability of food were thought to trigger overeating. This theory was supported by studies which found that obese individuals ate significantly



more than normal-weight individuals when more food was visible and available (Nisbett, 1968; Ross, 1974) or when the food was good-tasting compared to bad-tasting (Decke, 1971; Price & Grinker, 1973).

**Set-Point Theory.** An alternate explanation of the differences in eating patterns between obese and normal-weight individuals was put forward by Nisbett (1972a,b). He believed that body fat was stored in specialized fat cells, the number of which was permanently established by the end of adolescence. Following weight gain or weight loss, only the size and not the number of these fat cells changed. The size of these fat cells was thought to be defended by the central nervous system, in particular the hypothalamic feeding centers. According to the set-point theory, if persons reduced body weight and dropped below their biological set-points, they would become physiologically predisposed, by their hypothalamic feeding center, to overeat in order to nourish and increase the size of the fat cells.

Spencer and Fremouw (1979) cautioned that this physiological deprivation hypothesis has not been adequately evaluated because there are no objective devices that allow the direct evaluation of the degree of food deprivation. There is an indirect measure of suboptimal body weight, hypothermia, or cold intolerance (Nishita, Knopes, Ellinwood & Rockwell, 1986). Hypothermia, defined as a core temperature below 36.1 degrees Centigrade, is often used as one of the diagnostic criteria for anorexia (Halmi, Goldberg, Eckert, Casper & Davis, 1977; Warren & Vande Wiele, 1973).

**Restraint theory.** The restraint theory attributes overeating to restrained eating or dieting. It was originally developed by Herman and Mack (1975) to account for the differences which Schachter (1971) noted between the eating patterns of obese and normal-weight individuals. This theory was also based in part upon Nisbett's (1972a,b) set-point theory.

According to restraint theory (Herman, 1978), due to restraining food intake, individuals may drop below set-point. As a result of being

below set-point, a state of chronic hunger is physiologically induced and hypersensitivity to external cues results. Herman and Polivy (1975) suggested that almost any disinhibitor may disrupt the clients restraint and result in excessive food intake or counterregulation. Support for this theory was found in a series of laboratory studies. Conclusions were that restrained dieters ate more when compared with nonrestrained dieters: if a high calorie food was consumed, or thought to be consumed (Herman & Mack, 1975; Hibscher & Herman, 1977); when alcohol was consumed or thought to be consumed (Polivy & Herman, 1976a,b); when anxious or stressed (Herman & Polivy, 1975); or when depressed (Polivy & Herman, 1976a).

Summary of theories. Although these theories were initially developed to explain the overeating patterns observed in obese or overweight individuals, recent research has shown that these theories may have relevance for understanding bulimic symptoms observed in eating-disordered patients. Related to the psychosomatic theory, researchers have reported that eating-disordered patients have significant difficulties identifying and articulating internal states (Bruch, 1973). Eating-disordered clients report bingeing in response to being anxious or depressed (Frost, Goolkasian, Ely & Blanchard, 1982; Johnson & Larson, 1982; Johnson, Stuckey, Lewis & Schwartz, 1982) or unhappy (Casper et al. 1980; Pyle et al. 1981). Observed in recent studies related to the externality theory is that in every weight category differences existed in responsiveness to external food-relevant cues (Rodin, 1981a,b; Ross, Pliner, Nisbett, 1971).

Indirectly related to set-point theory, and directly related to restraint theory, dieting has been found to correlate with binge-eating tendencies and has been implicated as a risk factor for bulimic episodes (Leon, Carroll, Chernyk & Finn, 1985; Mitchell et al. 1985; Polivy & Herman, 1985; Rodin, Silberstein & Striegel-Moore, 1985; Wooley & Wooley, 1985). Both external and emotional eating are considered to be

consequences of intense dieting (Herman & Mack, 1975; Herman & Polivy, 1975; Polivy & Herman, 1976a, b, c).

#### Behaviors used to Counteract Weight Gain

Vomiting and laxative abuse. In many cases, unsuccessful dieting is associated with the decision to begin vomiting or purging for the purpose of weight control (Fairburn, 1980; Herzog, 1982a, b). Since these methods reduce or eliminate feelings of anxiety following the binge, they often become habits (Fairburn, Cooper & Cooper, 1986; Rosen & Leitenberg, 1982). In addition to reducing anxiety, vomiting may return the individual to a state of hunger and deprivation which would result in further binge eating (Agras & Kirkley, 1986). Because of the dehydration associated with both vomiting and laxative abuse, the regain of water weight may be mistaken for gain in fat composition, if the behaviors are interrupted and would result in reinstatement of the methods (Wooley & Wooley, 1982).

Exercise and hyperactivity. Some patients exercise as a means of weight control. This exercise is used to promote weight loss in general rather than being an immediate means of compensating for having overeaten (Fairburn, Cooper & Cooper, 1986).

Excessive physical activity is reported to be one of the earliest clinical signs among anorexics (Kron, Katz, Gorzynski & Weiner, 1978). It is also a common feature noted during the period of acute weight loss (Crisp, Hsu, Harding & Hartshorn, 1980b; Mavissakalian, 1982). Reports that patient's levels of physical activity return to normal after adequate nutrition is restored support the notion that hyperactivity is the result of semi-starvation (Crisp & Stonehill, 1970).

Offering support for the starvation effects on hyperactivity is the activity model of anorexia suggested by Epling, Pierce, and Stefan (1983). This model is based on the relationship between a hypothesized primitive survival response and food intake. The survival response is thought to occur during times of food scarcity and results in an increase

in activity in order to find food. At variance to the notion that hyperactivity is induced by semi-starvation are reports that patients who maintain or gain to a normal weight are more physically active than patients who are underweight (Falk, Halmi & Tryon, 1985).

#### Psychological Aspects Related to Disordered Eating

Several psychological aspects have been noted among eating-disordered clients. Most frequently reported are depression, anxiety, impulse control difficulties, feelings of ineffectiveness, social isolation, and body image distortion.

Depression. Complaints of depression are common among anorexics (Eckert, Goldberg, Halmi, Casper & Davis, 1982; Jones, Cheshire & Morehouse, 1985) and bulimics (Abraham & Beumont, 1982; Fairburn & Cooper, 1982a; Hawkins & Clement, 1984). There is agreement that anorexia and bulimia have an association with affective disorder (Hudson, Pope, Jonas & Yurgelun-Todd, 1983c; Kashani & Priesmeyer, 1983; Lundholm, in press; Rabkin, Charles & Kass, 1983), but the exact nature of the association remains unclear. In two reported hypotheses, an explanation of the relationship was suggested. One was that depression is secondary to the eating disorder (Hatsukami, Mitchell, & Eckert, 1984b) and the other was that the eating disorders are biologically linked to depression (Hudson, Pope, Jonas & Yurgelun-Todd, 1983c).

The hypothesis that depression is secondary to the eating disorder is supported by studies examining mood swings as a result of starvation, weight gain, and/or bingeing. Depressive symptoms increase in bulimics as weight increases or if no opportunity to vomit exists after eating (Fairburn, 1980). Depressive symptoms decrease with weight gain in anorectics (Eckert et al. 1982) and in semi-starved subjects (Keys, Brozek, Henshel, Mickelson & Taylor, 1950). Disphoric mood states are reported to increase prior to bingeing (Walsh, Roose, Glassman, Gladis & Sadik, 1985) suggesting that for some patients eating may be an antidote

for depression and used as self-medication and self-nurturance. Dysphoric mood states have also been reported to increase during or after the binge (Johnson & Larson, 1982) suggesting the mood state is a reaction to the binge eating episode.

The hypothesis that the eating disorders are biologically linked to depression is supported by studies examining the prevalence of affective disorders in first degree relatives, the abnormal response to dexamethasone suppression tests, and the positive response to tricyclic antidepressants or MAO inhibitors. A high prevalence of affective disorder in first degree relatives has been reported among anorexics (Hudson et al. 1983b) and bulimics (Gwirtsman et al. 1983; Hudson et al. 1983b). Several investigators have reported a higher family prevalence among anorexics with bulimic symptoms than among anorexic restrictors (Strober et al. 1982; Winokur, March & Mendels, 1980).

A common biological marker reported for primary affective disorder is dexamethazone nonsuppression (Carroll, 1982). Nonsuppression has been reported for both anorexics and bulimics (Gwirtsman et al. 1983; Hudson, Pope, Jonas, Laffer, Hudson & Melby, 1983a). Weight loss alone could account for these abnormalities in anorexics (Walsh, 1982) but the effects of weight loss are much less in bulimics (Hudson et al. 1983a). Positive responses to tricyclic antidepressants or MAO inhibitors have also been reported (Glassman & Walsh, 1983; Jonas, Hudson & Pope, 1983).

Anxiety. High levels of anxiety are reported in both anorexics (Crisp et al. 1980b) and bulimics (Grace et al. 1985; Walsh et al. 1985). This anxiety is possibly due to fear of weight gain (Rosen & Leitenberg, 1982) or the anticipated lack of control around food (Kirstein, 1981-82).

anticipated lack of control around food (Kirstein, 1981-82).

Bulimia may be an anxiety disorder akin to obsessive-compulsive neurosis, with vomiting reducing the anxiety associated with bingeing and therefore being negatively reinforced by this anxiety reduction (Rosen & Leitenberg, 1982). As a result, vomiting may become an effective method for controlling the fears related to weight gain. If no opportunity to vomit exists, then bingeing may not occur.

Impulse control difficulties. There are frequent reports of difficulties with impulse control behaviors such as alcohol abuse, stealing, or use of street drugs among eating-disordered patients. Alcohol and/or drug abuse have been reported among anorexics (Cantwell, Sturzenberg, Burrough, Salkin & Green, 1977) and bulimics (Hatsukami, Eckert, Mitchell & Pyle, 1984a; Leon et al. 1985; Walsh et al. 1985). This abuse may be an inappropriate means of coping since the drugs are often reportedly used to facilitate weight loss and the alcohol for sedative effects (Garrow, Crisp, Jordan, Meyer, Russell, Silverstone, Stunkard & Van Itallie, 1975). The abuse may also be passed down intergenerationally. Substance abuse has been found in first degree relatives of anorexics (Jones et al. 1985) and bulimics (Leon et al. 1985). A higher prevalence of alcohol abuse is reported among fathers than among mothers (Strober et al. 1982).

Frequent reports of alcohol and drug abuse among disordered patients have led some to believe that excessive starving among anorexics functions as a drug (Bachmann & Rohr, 1983) and/or that bulimia is a substance abuse and/or addictive disorder (Brisman & Siegel, 1984). Certainly, the behaviors characteristic of bulimics are comparable to patients with addictions: loss of control over the substance, preoccupation with the substance, use of the substance to cope with stress or negative feelings, and a tendency to remain secretive regarding the behavior. Bulimics, when compared to patients with addictions however, were found to have significantly lower scores on the MacAndrew Addiction

Scale (Hatsukami, Owen, Pyle & Mitchell, 1982).

Other impulse-related behaviors such as stealing and suicidal attempts have been reported among anorexics and bulimics (Johnson, Lewis & Hagman, 1984; Katzman & Wolchik, 1984; Leon et al. 1985). Anorexics with bulimic symptoms report more suicide attempts (Leibowitz, Quitkin & Stewart, 1981). A history of suicide, however, has also been reported among anorexic restrictors (Jones et al. 1985). An association of depression and suicide risk in long-term follow-up has been noted among anorexics (Eckert et al. 1982).

Bulimics are reported to steal frequently (Garfinkel & Garner, 1984). Most often stolen are food and money (Pyle et al. 1981).

Feelings of ineffectiveness. Feelings of ineffectiveness and low self-esteem are commonly reported among bulimics (Grace et al. 1985; Katzman & Wolchik, 1984) and among anorexics (Bruch, 1977). It is thought that the combination of strict dieting, bingeing and purging results in a fluctuating sense of self-control which contributes to these feelings (Garfinkel, Brown & Darby, 1981).

Social isolation. The bingeing-purging cycle interferes with personal relationships and activities (Fairburn, 1980; Herzog, 1982a,b; Pyle et al. 1981). Starvation for just a few days often results in preoccupation with food and social withdrawal (Crisp, 1980).

Anorexics are consistently reported to be socially withdrawn and introverted (Garfinkel et al. 1980). Introversion has also been reported among starved subjects (Keys et al. 1950). Similar to the starved subjects who became bored with people and withdrew socially, anorexics restrict their social activities (Garfinkel & Garner, 1982) and have few friends (Bruch, 1980). Bulimics are more extroverted and less isolated (Beumont, Abraham & Simson, 1981a; Garfinkel & Garner, 1982).

Body image distortion. Although many eating-disordered patients develop a disturbance in body image, reports are inconsistent in regard to this disturbance. Some indicate that eating-disordered patients believe

their bodies are much larger than they actually are (Casper et al. 1980; Katzman & Wolchik, 1984) and others indicate that eating-disordered patients believe their bodies are much smaller than they actually are (Touyz, Beumont, Collins, McCade & Jupp, 1984). To date, the reliability and validity of various body image measurement techniques are still in question (Garner & Garfinkel, 1977) making interpretation of these results ambiguous. Of particular interest is that body size overestimation persists following weight reduction for those with juvenile onset obesity but becomes more accurate for those with adult onset obesity (Stunkard, 1976; Grinker, 1973).

### Summary

What becomes apparent from this review, is that the behaviors and attitudes common to individuals with eating disorders are probably not due to any one aspect but rather a complex interaction of physiological, psychological, and behavioral aspects. What is needed to enhance the understanding of this complex interaction is research investigating both within and between group differences among anorexic and bulimic populations as well as differences among eating-disordered patients, psychiatric patients, and nonclinical populations.

### Organization of this Dissertation

Three manuscripts follow in Sections I, II, and III. In the first section, the psychological characteristics which differentiated diagnosed eating-disordered females from females without known eating disorders were investigated. In the second section, the psychological and behavioral characteristics related to disordered eating in general, and, in particular, the relationship of these characteristics to body weight and consummatory behavior of diagnosed eating-disordered females were investigated. In the third section, the physiological, psychological, and



behavioral aspects which differentiated among diagnosed eating-disordered, psychiatric, and medical patients were examined.

### General Methodology

#### Subjects

Four groups of female subjects were examined in this dissertation. One was a group of university students, one was a group of diagnosed eating-disordered patients, one was a group of psychiatric patients, and one was a group of medical patients.

The females in the university sample consisted of 265 students attending a large midwestern university and recruited from introductory psychology and physical education classes over a two-semester period. The classes included an incentive for extra credit points for research participation. Participation in the study was totally voluntary.

The eating-disordered sample consisted of 228 patients receiving either in-patient or out-patient treatment for their eating disorders at a large midwestern hospital. Of these patients, 23 were diagnosed as anorexic, and 205 were diagnosed as bulimic as defined by the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (American Psychiatric Association, 1980). The bulimic group was further differentiated on the basis of behavioral symptoms, with 154 defined as bulimarexic, those who vomit and/or purge; and 51 defined as bulimic, those who rarely vomit and/or purge, but binge. The patients were individually diagnosed by a psychiatrist, a physician, and a psychologist. The three diagnosticians had to agree before the patient was diagnosed and included in this study. Additionally, the patients were classified as being within their normal weight range for age and height (normal weight), or as being 25% above (overweight) or 25% below (underweight) their normal weight range according to the Metropolitan Life Insurance Company Tables (1983). Patients voluntarily signed a release authorizing the confidential

use of their records for research purposes.

The females in the psychiatric sample consisted of 27 patients receiving either in-patient or out-patient treatment at the same large midwestern hospital. These patients were diagnosed as having major depressive disorders, panic disorders, dysthymic disorders, or personality trait disorders. Each patient was diagnosed by a psychiatrist or a psychologist.

The females in the medical group were 24 out-patients receiving medical treatment by a general practitioner at the same midwestern hospital. Neither the female medical nor the female psychiatric patients were known to have eating disorders.

### Instruments

Three instruments were used in this dissertation. One was the Millon Clinical Multiaxial Inventory (MCMI) developed by Millon (1977); one was the Eating Disorders Instrument (EDI) developed by Garner and Olmsted (1984); and one was the Disordered Eating and Weight Control Inventory (DEWCI) developed by Lundholm and Wolins (in press).

The MCMI is a 175-item self-report diagnostic inventory. It consists of 20 scales subdivided into eight personality styles: Schizoid-Asocial (1), Avoidant (2), Dependent-Submissive (3), Histrionic-Gregarious (4), Narcissistic (5), Anti-Social-Agressive (6), Compulsive-Conforming (7), Passive Aggressive-Negativistic (8); three pathological personality disorders: Schizotypal-Schizoid (S), Borderline-Cycloid (C), and Paranoid (P); and nine transient clinical syndromes: Anxiety (A), Somatoform (H), Hypomania (N), Dysthymia (D), Alcohol Abuse (B), Drug Abuse (T), Psychotic Thinking (SS), Psychotic Depression (CC), and

Psychotic Delusion (PP). According to Millon (1977), the basic personality patterns are reflected as relatively enduring and pervasive traits that typify patient styles of behaving, perceiving, thinking, feeling, and relating to others; the pathological personality disorders describe chronic or periodically severe pathology; and the clinical symptom syndromes reflect a reactive state that is of a substantially briefer duration. Of the clinical symptom syndromes, disorders of moderate severity are represented on scales A, H, N, D, and B; and disorders of marked severity are represented on scales SS, CC and PP. Information relative to item overlap, scale intercorrelation, instrument reliability, and validity, is presented in the test manual (Millon, 1977).

The EDI is a 64-item self-report instrument which consists of eight scales: Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness, and Maturity Fears. Internal consistency measures, content validation, and additional validation studies are reviewed in the Manual for Eating Disorder Inventory (Garner & Olmsted, 1984). Other than internal consistency measures of the scales, no other reliability information is provided.

The DEWCI is a 46-item self-report instrument which consists of ten scales: Desire to be Thinner (DT), Restrained Eating (RE), Emotional Cues (EMC), External Cues (EXC), History of Being Overweight (HO), Cold Intolerance (CI), Concern About Being Too Thin (CT), Exercise Behavior (EB), Vomiting (VT), and Laxative Use (LX). The original instrument was factor analyzed on a sample of 502 female university students. Of the ten factors identified, six had internal consistency estimates above .80 (DT, EXC, CI, EB, VT, LX); three had estimates above .60 (RE, EMC, CT); and one had an estimate of .55 (HO).

#### Procedure

The university females were administered the MCMI in a group setting as part of a larger research project. The eating-disordered females received individual administration of all three instruments as part of

pre-treatment testing. The psychiatric and medical patients were given the opportunity to complete the DEWCI on a voluntary basis while in waiting rooms of their physician or psychologist.

The number of eating-disordered patients who completed each instrument is included in TABLE 1. Of the total sample of 228 patients, there were 58 who completed all three instruments. Of these 58 patients, 6 were anorexic, 9 were bulimic, and 43 were bulimarexic. There were 119 patients who completed only two instruments. Of those who completed only the EDI and MCMI, 6 were anorexic, 35 were bulimic, and 59 were bulimarexic. Of those who completed only the EDI and DEWCI, 1 was anorexic, 2 were bulimic, and 8 were bulimarexic. Of those who completed only the MCMI and DEWCI, 5 were anorexic, 1 was bulimic, and 2 were bulimarexic. There were 51 patients who only completed one instrument. Of those who completed only the EDI, 1 was anorexic, 3 were bulimic, and 23 were bulimarexic. Of those who completed only the MCMI, 2 were anorexic, 1 was bulimic, and 4 were bulimarexic. Of those who completed only the DEWCI, 2 were anorexic, and 15 were bulimarexic.

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Insert TABLE 1 about here

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### Data Analysis

In the first study, the MCMI was used to determine if there were psychological characteristics which would differentiate subgroups of eating-disordered patients, and also if there were psychological characteristics which would differentiate eating-disordered patients from females without eating problems. Since considerable item overlap was reported in the MCMI test manual (Millon, 1977), individual item differences, rather than scale differences, were investigated. The three eating-disordered comparison groups were: (1) anorexics, (2) bulimics, and (3) bulimarexics. Since one of the three comparison groups was small ( $n < 30$ ), the statistical procedure used in this study was that

recommended by Wolins (1982). In order to determine if the three eating-disordered groups differed significantly on any of the MCMI items, three dummy variables were constructed contrasting: (1) anorexics with bulimics, (2) anorexics with bulimarexics, and (3) bulimics with bulimarexics. These dummy variables were artificial variables which were used to denote the classification of the observations on the MCMI items (Brown, 1976). Each of the MCMI items was correlated with the dummy variable (Statistical Analysis System Institute, 1982). Due to the large number of correlations which were examined, with the resulting probability that several would be significant due to chance alone, a conservative level of significance ( $p < .005$ ) was employed. None of the items significantly differentiated between the bulimics and bulimarexics. Only two items significantly differentiated the anorexics from the bulimics, and the anorexics from the bulimarexics. Therefore, the subgroups were combined into one group of eating-disordered patients.

In order to determine if the eating-disordered group differed from the university female group, a dummy variable was constructed contrasting the two groups. Each item was correlated with the dummy variable. Due to the large number of correlations which were examined, with the resulting probability that several would be significant due to chance alone, a conservative level of significance ( $p < .005$ ) was employed. Of the items, 64% significantly differentiated between the two groups.

Which items were most differential was next investigated. Item mean proportions for each group were calculated and transformed Probit (Statistical Analysis System Institute, 1982) to Z scores for group comparisons. The ability of each item to discriminate between the eating-disordered females and the university females was determined by examining the difference of the Z scores between the two groups. Those items which differed by at least one standard deviation ( $Z \geq 1.00$ ) were identified as the most discriminating.

The relationship of the discriminating items to the 20 clinical scales

was next examined by determining the percentage that were included on each of the scales. The scales which had the largest percentage of items included were identified. The identified items were then categorized and listed according to the scales on which they were included, so that the differentiating personality aspects could be discussed.

Also of interest was determining which items included in these identified scales did not differentiate between the groups, and which were not responded to in a manner suggested by the scale. The item Probit Z-values were scatterplotted and outlying items were identified within each scatterplot. That is, the Probit Z-values for the eating-disordered group was plotted against the Probit Z-values for the university students.

The second study used the EDI to investigate the psychological and behavioral differences between five eating-disordered comparison groups: (1) overweight bingers, (2) normal weight bingers, (3) overweight vomiters/purgers, (4) normal weight vomiters/purgers, and (5) underweight anorexics. Since three of the five comparison groups were small ( $n < 30$ ), the statistical procedure used in this study was that recommended by Wolins (1982). In order to determine if the five eating-disordered groups differed significantly on any of the eight EDI scales, ten dummy variables were constructed contrasting: (1) overweight bingers with normal weight bingers, (2) overweight bingers with overweight vomiters/purgers, (3) overweight bingers with normal weight vomiters/purgers, (4) overweight bingers with underweight anorexics, (5) normal weight bingers with overweight vomiters/purgers, (6) normal weight bingers with normal weight vomiters/purgers, (7) normal weight bingers with underweight anorexics, (8) overweight vomiters/purgers with normal weight vomiters/purgers, (9) overweight vomiters/purgers with underweight anorexics, and (10) normal weight vomiters/purgers with underweight anorexics. Each of the EDI scales was correlated with the dummy variable. Due to the large number of correlations which were examined, with the resulting probability that several would be significant due to chance alone, a conservative

significance level ( $p < .005$ ) was employed.

In the third study, the DEWCI was used to investigate physiological, psychological, and behavioral differences between five comparison groups: (1) anorexics, (2) bulimics, (3) bulimarexics, (4) psychiatric controls, and (5) medical controls. Since four of the five comparison groups were small ( $n < 30$ ) the statistical procedure used was that recommended by Wolins (1982). In order to determine if the five comparison groups differed significantly on any of the ten DEWCI scales, ten dummy variables were constructed contrasting: (1) anorexics with bulimics, (2) anorexics with bulimarexics, (3) bulimics with bulimarexics, (4) anorexics with psychiatric controls, (5) anorexics with medical controls, (6) bulimics with psychiatric controls, (7) bulimics with medical controls, (8) bulimarexics with psychiatric controls, (9) bulimarexics with medical controls, and (10) psychiatric controls with medical controls. Each of the DEWCI scales was correlated with the dummy variable. Due to the large number of correlations which were examined, with the resulting probability that several would be significant due to chance alone, a conservative level of significance ( $p < .005$ ) was employed.

#### Human Subjects Protection

The Iowa State University Committee on the Use of Human Subjects in Research reviewed this project and concluded that the welfare of the subjects was adequately protected, that the risks were outweighed by the potential benefits and expected value of the knowledge sought, that confidentiality of the data was assured, and that informed consent was obtained by appropriate procedures.

**TABLE 1**  
**The number of anorexics (A), bulimics (B), and bulimarexics (BA) who**  
**completed the EDI, MCM1, and DEWCI**

	EDI	MCM1	DEWCI
A	6	6	6
A	6	6	-
A	1	-	1
A	-	5	5
A	1	-	-
A	-	2	-
A	-	-	2
B	9	9	9
B	35	35	-
B	2	-	2
B	-	1	1
B	3	-	-
B	-	1	-
BA	43	43	43
BA	59	59	-
BA	8	-	8
BA	-	2	2
BA	23	-	-
BA	-	4	-
BA	-	-	15



SECTION I: ASSESSMENT OF PSYCHOLOGICAL CHARACTERISTICS  
WHICH DIFFERENTIATE DIAGNOSED EATING-DISORDERED FEMALES  
FROM FEMALES WITHOUT KNOWN EATING DISORDERS

Descriptions of psychological characteristics related to eating-disordered patients have attracted much attention in the research literature. Historically, this research has been reported along categorical lines based on the type of eating disorder diagnosed; in particular anorexia (Norman & Herzog, 1983; Small, Madero, Gross, Teagno, Leib & Ebert, 1981; Strober, 1980) or bulimia (Hatsukami, Owen, Pyle & Mitchell, 1982; Norman & Herzog, 1983).

With the growing recognition that bulimia occurs in females who are underweight (Garfinkel & Garner, 1982), obese (Endelman, 1981; Gormally, Black, Datson & Rardin, 1982), or normal weight (Cooper & Fairburn, 1983); and that diagnosed eating-disordered patients frequently move between the syndromes of anorexia and bulimia at different times (Vanderecycken & Pierloot, 1983) a trend is emerging to consider these disorders as a single syndrome.

In recent studies, it has been reported that patients with differential eating-disordered diagnoses have similar clinical and psychological aspects (Fairburn & Cooper, 1984; Garner, Garfinkel & O'Shaughnessy, 1985). The most frequently-reported aspects are depression, anxiety, social withdrawal, and alcohol and drug abuse.

Depression is common among anorexics (Jones, Cheshire & Moorhouse, 1985), bulimics (Hudson, Pope, Jonas & Yurgelun-Todd, 1983a), and even among overweight individuals who are dieting (Stunkard & Rush, 1974). These depressive symptoms may be due to the physiological effects of weight loss or fluctuations in nutritional status (Hatsukami, Mitchell & Eckert, 1984), to the psychological effects of the feelings of helplessness, shame, guilt and ineffectiveness (Johnson & Pure, 1986), or to a biological link to depression (Hudson, Pope, Jonas & Yurgelun-Todd, 1983b).

Anxiety is also consistently reported among anorexics (Crisp, Hsu, Harding & Hartshorn, 1980) and bulimics (Grace, Jacobson & Fullager, 1985; Walsh, Roose, Glassman, Gladis & Sadik, 1985). Keck and Fiebert (1986) believed that females with eating disorders use their disorder to avoid anxiety. They found that these females do not feel secure with their own values and beliefs and, as a result, use losing weight and being accepted as a way of coping. The anxiety is also thought to be due to fear of weight gain (Rosen & Leitenberg, 1982) or the anticipated lack of control around food (Kirstein, 1981-82).

Eating-disordered clients have been noted to have difficulty in interpersonal situations (Johnson & Berndt, 1983; Norman & Herzog, 1984). They are sensitive to the reactions of others and rather than risk anger or rejection they often avoid others (Johnson & Pure, 1986).

Alcohol and drug abuse is also commonly reported among anorexics (Eckert, Goldberg, Halmi, Casper & Davis, 1979) and bulimics (Mitchell, Hatsukami, Eckert & Pyle, 1985; Walsh et al., 1985). This abuse may be an inappropriate means of coping since drugs are often reportedly used to facilitate weight loss and alcohol is reportedly used for sedative effects (Garrow, Crisp, Jordan, Meyer, Russell, Silverstone, Stunkard & Van Itallie, 1975). The tendency toward alcohol abuse may also be passed down intergenerationally. Substance abuse has been found in first degree relatives of anorexics (Jones et al., 1985) and bulimics (Leon, Carroll, Chernyk & Finn, 1985).

The aim of this study was to extend the research findings related to the psychological characteristics of diagnosed eating-disordered patients. In particular, the purpose was to determine if there were psychological characteristics which would differentiate groups of eating-disordered patients, and also if there were psychological characteristics which would differentiate eating-disordered patients from females without eating problems.

## Method

### Subjects

Two groups of subjects were tested in this study. One was a group of university females and the other was a group of eating-disordered patients who were currently receiving treatment for their disorders.

The females in the university sample consisted of 265 students attending a large midwestern university and recruited from introductory psychology and physical education classes over a two-semester period. These classes included an incentive for extra credit points for research participation. Participation in the study was totally voluntary.

The eating-disordered sample consisted of 173 female patients receiving treatment in a large midwestern hospital. Of these patients, 19 were diagnosed as anorexic, and 154 were diagnosed as bulimic as defined by the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (American Psychiatric Association, 1980). The bulimic group was further differentiated on the basis of behavioral symptoms with 108 defined as bulimarexic, those who vomit and/or purge; and 46 defined as bulimic, those who rarely vomit and/or purge, but binge. A psychiatrist, a physician, and a psychologist, made independent diagnoses and all three had to agree before a diagnosis was made and the patients were included in this study. Patients voluntarily signed a release authorizing the confidential use of their records for research purposes.

### Instrument

The instrument used in this study was the Millon Clinical Multiaxial Inventory (MCMI), a 175-item self-report diagnostic inventory developed by Millon (1977). The instrument consists of 20 scales subdivided into eight personality styles: Schizoid-Asocial (1), Avoidant (2), Dependent-Submissive (3), Histrionic-Gregarious (4), Narcissistic (5), Anti-Social-Aggressive (6), Compulsive-Conforming (7), Passive Aggressive-Negativistic (8); three pathological personality disorders:

Schizotypal-Schizoid (S), Borderline-Cycloid (C), and Paranoid (P); and nine transient clinical syndromes: Anxiety (A), Somatoform (H), Hypomania (N), Dysthymia (D), Alcohol Abuse (B), Drug Abuse (T), Psychotic Thinking (SS), Psychotic Depression (CC) and Psychotic Delusion (PP). According to Millon (1977), the basic personality patterns are reflected as relatively enduring and pervasive traits that typify patient styles of behaving, perceiving, thinking, feeling, and relating to others; the pathological personality disorders describe chronic or periodically severe pathology; and the clinical symptom syndromes reflect a reactive state that is of a substantially briefer duration. Of the clinical symptom syndromes, disorders of moderate severity are represented on scales A, H, N, D, and B; and disorders of marked severity are represented on scales SS, CC and PP. Relative to item overlap, scale intercorrelation, instrument reliability, and validity, information is presented in the test manual (Millon, 1977).

#### Procedure

The university females were administered the MCMI in a group setting as part of a larger research project. The eating-disordered females received individual administration of the MCMI as part of pre-treatment testing. All the protocols used in this analysis were computer scored and valid.

#### Data Analysis

Since considerable item overlap was reported in the test manual (Millon, 1977), individual item differences, rather than scale differences, were investigated. One of the three comparison groups of interest was small ( $n < 30$ ). Therefore, the statistical procedure used in this study was that recommended by Wolins (1982). In order to determine if the three eating-disordered groups differed significantly on any of the MCMI items, three dummy variables were constructed contrasting: (1) anorexics with bulimics, (2) anorexics with bulimarexics, and (3) bulimics with bulimarexics. Each of the items was

correlated with the dummy variable. In order to determine if the eating-disordered patients as a group, differed from the university female group, one dummy variable was constructed contrasting the two groups. Each of the items was correlated with the dummy variable. Due to the large number of correlations which were examined with the resulting probability that several would be significant due to chance alone, a conservative significance level ( $p < .005$ ) was employed for all contrasts.

Which items were most differential was next investigated. Item mean proportions for each group were calculated and transformed Probit (Statistical Analysis System Institute, 1982) to Z scores for group comparisons. The ability of each item to discriminate between the the eating-disordered females and the university females was determined by examining the difference of the Z scores between the two groups. Those items which differed by at least one standard deviation ( $Z \geq 1.00$ ) were identified as the most discriminating.

The relationship of the discriminating items to the 20 clinical scales was next examined by determining the percentage that were included on each of the scales. The scales which had the highest percentage of items included were identified. The identified items were then categorized and listed according to the scales on which they were included so that the differentiating personality features could be discussed.

Also of interest was determining which items included in these identified scales did not differentiate between the groups and which were not responded to in a manner suggested by the scale. The item Probit Z-values were scatterplotted and the outlying items were identified within each scatterplot. That is, the Probit Z-values for the eating-disordered group was plotted against the Probit Z-values for the university students.

## Results

Demographic data for the university female group and the eating-disordered group are presented in TABLE 1. The eating-disordered females were slightly older, shorter, and heavier. The difference between the average highest and average lowest weight for the eating-disordered group was 59.16 pounds compared to a difference of 10.80 pounds for the university females.

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Insert TABLE 1 about here

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None of the MCMI items significantly differentiated between the bulimics and bulimarexics. Only two items significantly ( $p < .005$ ) differentiated the anorexics from the bulimics, and the anorexics from the bulimarexics. Therefore, the subgroups were combined into one group of eating-disordered patients. Of the items, 64% significantly ( $p < .005$ ) differentiated between the two groups.

The means, Z scores, and Z score differences of the MCMI items which were identified as differentiating between the university females (UF) and eating-disordered females (EDF) are listed in TABLE 2. Of the 27 items identified, all are listed according to the Z score difference, beginning with the largest difference and ending with the smallest difference. Thus, the items at the top of the list were more discriminating than the items at the bottom. The EDF group had higher mean scores than the UF group on 22 of these items, which indicates that the EDF females were more likely to give a "True" response to those items. The EDF group had lower mean scores than the UF group on 5 items, which indicates that the EDF group was more likely to respond "False" to those items.

---

Insert TABLE 2 about here

---

Of the 20 clinical scales, five contained at least 27% of the differentiating items. Those scales were Dysthymia (39%), Anxiety (32%), Psychotic Depression (29%), Schizotypal-Schizoid (27%), and Borderline-Cycloid (27%).

Those items which differentiated between the UF and EDF groups and were included on the Dysthymia scale are listed in TABLE 3. Of the 14 items identified, the EDF group endorsed 12 of the items as "True" and two of the items as "False," as compared to the responses of the UF group. An examination of the item content revealed that the EDF group reported being sad, discouraged, weak, worn out, tearful, socially withdrawn, lonely, and without social activities or excitement, and going to pieces. Of the 14 items, 10 had qualifiers related to recent occurrence (e.g., recently, now, lately) indicating that these feelings and behaviors were more transient rather than enduring personality aspects, and may be a result of the eating-disorder.

---

Insert TABLE 3 about here

---

The scatterplot of the items included on the Dysthymia scale are presented in Figure 1. Two items were identified as being outlying. Both groups responded neutrally to the item "I find it hard to sympathize with people who are always unsure about things (41.);" and both groups responded "False" to the item "A long time ago, I decided it's best to have little to do with people (83.)."

---

Insert Figure 1 about here

---

Those items which differentiated between the UF and EDF groups and that were included on the Anxiety scale are listed in TABLE 4. Of the 12 items identified, all except one were also included on the Dysthymia scale. The item which was not included was "I feel weak and tired much of the time (33.)."

---

Insert TABLE 4 about here

---

The scatterplot of the items included on the Anxiety scale are presented in Figure 2. Of these, 5 items were identified as outlying. Both groups responded neutrally to the items "I am very changeable in my likes and dislikes (12.)," "I always try hard to please others, even when I dislike them (78.)," and "When things scared me as a child, I almost always ran to my mother (113.)." Both groups responded "False" to the items "I have a hard time keeping my balance when walking (29.)," and "I'm so quiet and withdrawn, most people don't even know I exist (47.)."

---

Insert Figure 2 about here

---

Those items which differentiated between the UF and EDF group that were included on the Psychotic Depression scale are listed on TABLE 5. Of the seven items identified, all except one were included on the Dysthymia and Anxiety scales. The item not included was "I hate to talk, even to people I know (55.)"

---

Insert TABLE 5 about here

---

The scatterplot of the items included on the Psychotic Depression scale are presented in Figure 3. Of the items, two were identified as outlying. Both groups responded neutrally to these items "I very often say things quickly that I regret having said (95.)," and "Others have tried to do me in, but I have the will power to overcome them (146.)."

---

Insert Figure 3 about here

---

Those items which differentiated between the UF and EDF group that were included on the Schizotypal-Schizoid scale are listed in TABLE 6. Of the items, 12 were identified. Compared to the UF group, the EDF group



endorsed 11 of the items as "True" and one item "False." An examination of the item content revealed that the EDF group reported feeling "weak and fearful," being "ill-at-ease with social encounters," having a "minimum of personal attachments", and preferring "a life of isolation." Two of the items related to "not having strength" had qualifiers related to recent occurrence (e.g., lately) indicating that these behaviors may be secondary to the eating disorder.

---

Insert TABLE 6 about here

---

The scatterplot of the items included on the Schizotypal-Schizoid scale are presented in Figure 4. Only one item was identified as outlying (e.g., 38). The EDF group responded "False" to this item which was "Under no circumstances do I ever let myself be tricked by people who say they need help."

---

Insert Figure 4 about here

---

Those items which differentiated between the UF and EDF group that were included on the Borderline-Cycloid scale are listed in TABLE 7. Of these, 12 items were identified with six being included on the Dysthymia, Anxiety, and Psychotic Depression scales. Of the remaining six items, four were also included on the Dysthymia and Anxiety scales. The two items not included on any of the scales previously discussed were "Looking back on my life, I know I have made others suffer as much as I have suffered (110.)," and "All my life I have felt guilty for letting down so many people (134.)." Compared to the UF group, the EDF group endorsed these items as "True."

---

Insert TABLE 7 about here

---

The scatterplot of the items included on the Borderline-Cycloid scale are presented in Figure 5, with three items identified as outlying. Both groups responded neutrally to two of these items which were "I always try hard to please others, even when I dislike them (78.)," and "I prefer to be with people who will be protective of me (173.)." The EDF group responded "False" to this item which was related to criticizing people who annoy them.

---

Insert Figure 5 about here

---

#### Discussion

Of the 20 clinical scales, the five that included the highest percentages of items which differentiated the EDF from UF groups were Dysthymia, Anxiety, Psychotic Depression, Schizotypal-Schizoid, and Borderline-Cycloid. According to Millon (1977), patients with elevated scores on the these scales have the following characteristics. The patient who scores high on the dysthymia scale (1) is downhearted, (2) preoccupied with feelings of discouragement or guilt, and (3) expresses self-deprecatory comments. The patient who scores high on the anxiety scale (1) is either apprehensive or phobic, (2) is tense or restless, and (3) complains of various physical discomforts. The patient who scores high on the psychotic depression scale (1) is severely depressed and incapable of functioning in a normal environment, and (2) expresses a dread of the future and a sense of hopelessness. The patient who scores high on the schizotypal-schizoid scale (1) prefers a life of isolation with minimal friends and obligations, (2) is perceived by others as strange or different, (3) is perceived by others as self-absorbed and lost in daydreams, (4) is either anxious and suspicious, or sluggish and joyless,

and (5) experiences feelings of emptiness and meaningless. The patient who scores high on the borderline-cycloid scale (1) is either depressed or excited, (2) experiences desultory energy levels, (3) reveals self-mutilating and suicidal thoughts, (4) is preoccupied with securing attention and emotional support, and (5) simultaneously experiences conflicting emotions and thoughts towards others.

If scale scores rather than individual items had been examined in this study, the above aspects would have been identified as differentiating the EDF from the UF group. Instead, examining individual items produced a different picture of eating-disordered patients. On the basis of examining the content of the differentiating items, the eating-disordered females were characterized as being socially withdrawn and depressed. Related to being socially withdrawn, the EDF group reported "few close ties with other people," "little interest in making new friends," "a hate and/or fear of most people," a belief that "few people like them," a "lack of social activities," a feeling of "self consciousness and tension in social groups," and a belief that they "let people down" and "caused them to suffer." Related to feeling depressed, the eating-disordered females reported "recently becoming discouraged and sad," "recently feeling like a failure," "loosing strength and becoming weak and tired lately," "feeling lonely and empty lately," and "crying for no reason lately." They also reported never feeling cheerful or experiencing much excitement in life.

Well recognized is that these psychological aspects are often secondary to starvation or semi-severe dieting among anorexics (Fairburn, Cooper & Cooper, 1986; Garner, Rockert, Olmsted, Johnson & Coscina, 1985). Experiments on male volunteer prisoners have shown that semi-starvation can result in depression, anxiety, and social withdrawal (Keys, Brozek, Henshel, Mickelson & Taylor, 1950). Thus, the possibility exists that these aspects are secondary to the eating disorder.

One consensus is that since most of the eating-disordered patients

were hospitalized for treatment they may have been experiencing a reactive depression. Another is that anorexia and bulimia have an association with affective disorder or depression (Hudson et al. 1983b; Kashani & Priesmeyer, 1983; Rabkin, Charles & Kass, 1983) but the exact nature of the association remains unclear. A couple of hypotheses concerning the relationship have been reported. One is that depression is secondary to the eating disorder (Hatsukami, Mitchell & Eckert, 1984) and the other is that the eating disorders are biologically linked to depression (Hudson, 1983b). Since most of the items related to depression, which differentiated the groups, had timewise-like modifiers (e.g., recently, lately) the eating-disordered group in this study was experiencing depressive symptoms secondary to the eating disorder.

Future research on psychological characteristics need to focus on identifying subgroups within the overall eating-disordered patient population in order to examine within and between group differences. Additionally, identifying differences among eating-disordered subgroups and other psychiatric populations would be beneficial.

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**TABLE 1**  
**Demographic information on the university females (UF) and the**  
**eating-disordered females (EDF)**

	UF (n=265)		EDF (n=173)	
	$\bar{X}$	SD	$\bar{X}$	SD
Age	19.39	1.52	26.92	8.15
Height	66.07	2.72	65.30	2.81
Weight	133.28	20.95	152.28	59.10
Highest Weight	138.34	25.09	175.89	59.77
Lowest Weight	127.54	20.72	116.73	25.97

**TABLE 2**  
**Means, Z scores, and Z score differences of the MCMI items which had a Z**  
**score difference between the university females (UF) and**  
**eating-disordered females (EDF) of at least one standard deviation (Z**  
**score difference >1.00)**

Item	EDF (n=173)		UF (n=265)		Z Score Difference
	$\bar{X}$	Z	$\bar{X}$	Z	
76.	.65	.37	.16	-1.00	1.37
108.	.52	.06	.10	-1.29	1.35
134.	.59	.22	.14	-1.10	1.32
83.	.22	-.77	.02	-2.08	1.31
99.	.71	.55	.22	-.76	1.31
54.	.73	.60	.25	-.69	1.29
132.	.67	.44	.21	-.81	1.25
27.	.80	.83	.35	-.38	1.21
34.	.26	-.64	.72	.57	1.21
167.	.53	.09	.13	-1.12	1.21
45.	.64	.36	.20	-.84	1.20
60.	.47	-.07	.87	1.13	1.20
55.	.20	-.85	.02	-2.00	1.15
33.	.73	.60	.29	-.54	1.14
49.	.37	-.34	.07	-1.46	1.12
102.	.09	-1.32	.01	-2.43	1.11
13.	.14	-1.08	.02	-2.17	1.09
150.	.23	-.75	.03	-1.83	1.08
110.	.68	.47	.28	-.60	1.07
158.	.67	.44	.27	-.62	1.06
63.	.15	-1.03	.02	-2.08	1.05
93.	.57	.18	.89	1.23	1.05
96.	.69	.48	.29	-.56	1.04
53.	.69	.48	.29	-.55	1.03
6.	.42	-.19	.79	.81	1.00
36.	.49	-.03	.15	-1.03	1.00
86.	.48	-.06	.83	.94	1.00

TABLE 3

MCMII items which had a Z score difference between the university females and eating-disordered females of at least one standard deviation and which are included on the scale Dysthymia (D)

---

76.	I feel terribly depressed and sad much of the time now. T
108.	I just don't have the strength lately to fight back. T
83.	A long time ago, I decided it's best to have little to do with people. T
99.	I've become quite discouraged and sad about life recently. T
54.	I've begun to feel like a failure in recent weeks. T
132.	Lately, I've been feeling sad and blue and I can't seem to snap out of it. T
27.	Lately, I've begun to feel lonely and empty. T
167.	Lately, I have gone all to pieces. T
45.	I get very depressed now by even minor things. T
96.	In recent weeks I feel worn out for no special reason. T
53.	Lately, my strength seems to be draining out of me, even in the morning. T
6.	I love to have many different social activities and like to go from one to another. F
36.	Lately, I find myself crying without any reason. T
86.	When things get boring, I like to stir up some excitement. F

---

Note. Items at the top of the list have the largest Z score difference.

Note. A "T" following the statement indicates that, compared to the university females, the eating-disordered females responded "True," and an "F" following the statement indicates they responded "False."

TABLE 4

MCMII items which had a Z score difference between the university females and eating-disordered females of at least one standard deviation and which are included on the scale Anxiety (A)

---

76.	I feel terribly depressed and sad much of the time now. T
108.	I just don't have the strength lately to fight back. T
99.	I've become quite discouraged and sad about life recently. T
54.	I've begun to feel like a failure in recent weeks. T
132.	Lately, I've been feeling sad and blue and I can't seem to snap out of it. T
27.	Lately, I've begun to feel lonely and empty. T
167.	Lately, I have gone all to pieces. T
45.	I get very depressed now by even minor things. T
33.	I feel weak and tired much of the time. T
96.	In recent weeks I feel worn out for no special reason. T
53.	Lately, my strength seems to be draining out of me, even in the morning. T
36.	Lately, I find myself crying without any reason. T

---

Note. Items at the top of the list have the largest Z score difference.

Note. A "T" following the statement indicates that, compared to the university females, the eating-disordered females responded "True," and an "F" following the statement indicates they responded "False."

**TABLE 5**  
**MCMI items which had a Z score difference between the university females and eating-disordered females of at least one standard deviation and which are included on the scale Psychotic Depression (CC)**

---

76.	I feel terribly depressed and sad much of the time now. T
108.	I just don't have the strength lately to fight back. T
99.	I've become quite discouraged and sad about life recently. T
54.	I've begun to feel like a failure in recent weeks. T
45.	I get very depressed now by even minor things. T
55.	I hate to talk, even to people I know. T
53.	Lately, my strength seems to be draining out of me, even in the morning. T

---

**Note.** Items at the top of the list have the largest Z score difference.

**Note.** A "T" following the statement indicates that, compared to the university females, the eating-disordered females responded "True," and an "F" following the statement indicates they responded "False."

TABLE 6

MCMII items which had a Z score difference between the university females and eating-disordered females of at least one standard deviation and which are included on the scale Schizotypal-Schizoid (S)

- 
108. I just don't have the strength lately to fight back. T  
 83. A long time ago, I decided it's best to have little to do with people. T  
 60. I am always looking to make new friends and meet new people. F  
 55. I hate to talk, even to people I know. T  
 33. I feel weak and tired much of the time. T  
 49. I am a quiet and fearful person. T  
 102. I hate or fear most people. T  
 13. I have little interest in making friends. T  
 150. I have almost no close ties with other people. T  
 158. In social groups I am almost always very self-conscious and tense. T  
 63. Few people like me. T  
 53. Lately, my strength seems to be draining out of me, even in the morning. T
- 

Note. Items at the top of the list have the largest Z score difference.

Note. A "T" following the statement indicates that, compared to the university females, the eating-disordered females responded "True," and an "F" following the statement indicates they responded "False."

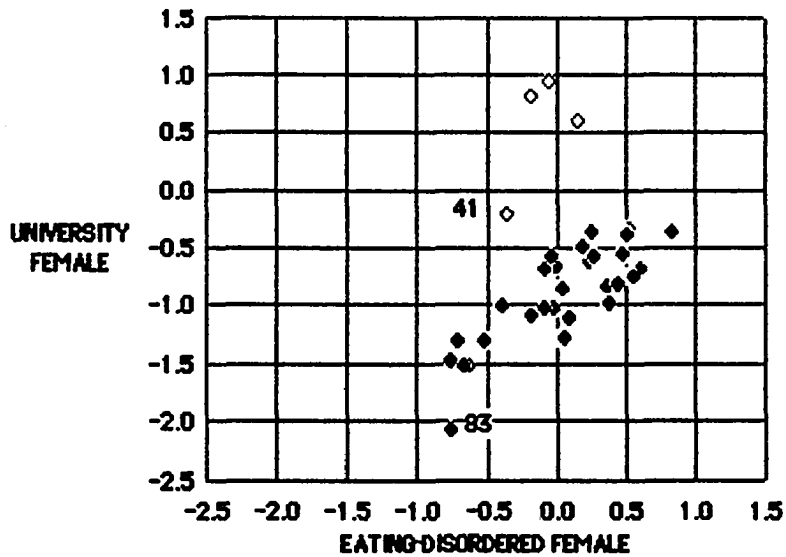
TABLE 7

MCMI items which had a Z score difference between the university females and eating-disordered females of at least one standard deviation and which are included on the scale Borderline-Cycloid (C)

- 
76. I feel terribly depressed and sad much of the time now. T  
 108. I just don't have the strength lately to fight back. T  
 134. All my life I have guilty for letting down so many people. T  
 99. I've become quite discouraged and sad about life recently. T  
 54. I've begun to feel like a failure in recent weeks. T  
 132. Lately, I've been feeling sad and blue and I can't seem to snap out of it. T  
 27. Lately, I've begun to feel lonely and empty. T  
 167. Lately, I have gone all to pieces. T  
 45. I get very depressed now by even minor things. T  
 110. Looking back on my life, I know I have made others suffer as much as I have suffered. T  
 53. Lately, my strength seems to be draining out of me, even in the morning. T  
 36. Lately, I find myself crying without any reason. T
- 

Note. Items at the top of the list have the highest Z score difference.

Note. A "T" following the statement indicates that, compared to the university females, the eating-disordered females responded "True," and an "F" following the statement indicates they responded "False."



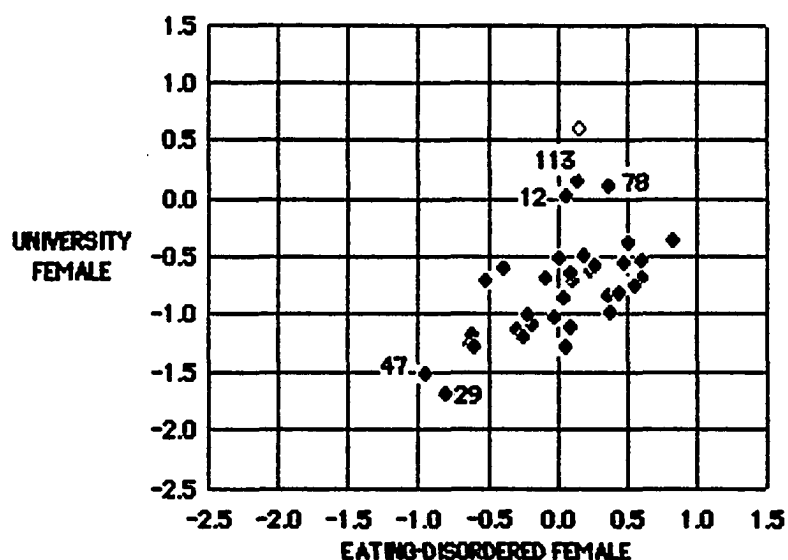
Note. Black diamonds indicate the item is scored "True." White diamonds indicate the item is scored "False."

Note. The composition of this clinical scale includes the following items: 2, 5, 6, 7, 8, 26, 27, 36, 41, 45, 51, 53, 54, 56, 59, 65, 71, 72, 73, 76, 79, 83, 86, 91, 96, 97, 99, 107, 108, 109, 132, 136, 156, 162, 166, 167.

Note. Items which are underlined indicate items which had a Z score difference between the two groups of at least one standard deviation.

**Figure 1** A scatterplot of the university female and eating-disordered female item Z scores on the MCMI scale Dysthymia (D).



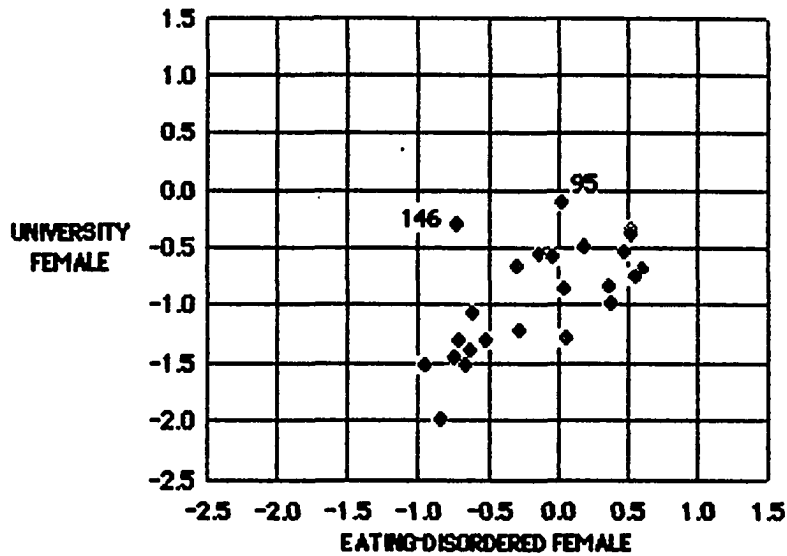


Note. Black diamonds indicate the item is scored "true." White diamonds indicate the item is scored "false."

Note. The composition of this clinical scale includes the following items: 5, 8, 12, 16, 18, 25, 26, 27, 29, 33, 36, 44, 45, 47, 51, 53, 54, 67, 71, 73, 76, 78, 96, 97, 99, 108, 109, 112, 113, 114, 117, 121, 132, 145, 153, 166, 167.

Note. Items which are underlined indicate items which had a Z score difference between the two groups of at least one standard deviation.

**Figure 2** A scatterplot of the university female and eating-disordered female item Z scores on the MCMI scale Anxiety (A).

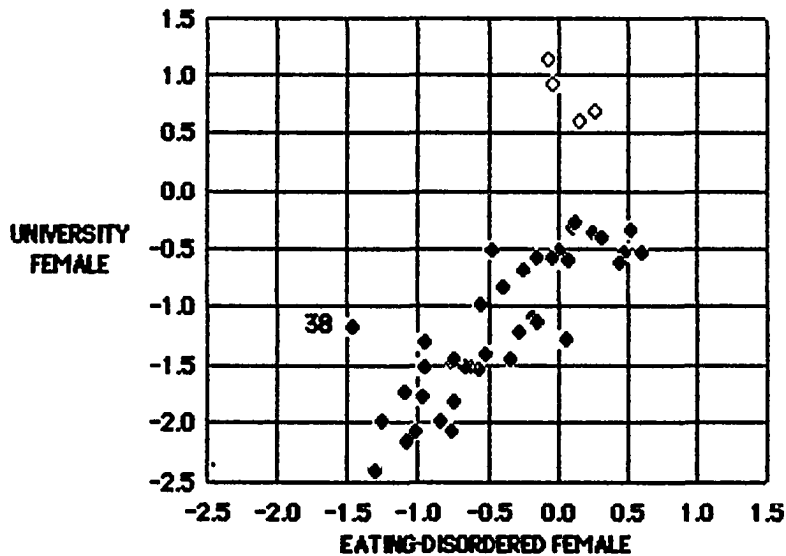


Note. Black diamonds indicate the item is scored "true." White diamonds indicate the item is scored "false."

Note. The composition of this clinical scale includes the following items: 2, 19, 22, 26, 45, 47, 50, 51, 53, 54, 55, 56, 58, 59, 76, 79, 82, 95, 99, 101, 108, 136, 146, 162.

Note. Items which are underlined indicate items which had a Z score difference between the two groups of at least one standard deviation.

**Figure 3** A scatterplot of the university female and eating-disordered female item Z scores on the MCMI scale Psychotic Depression (CC).

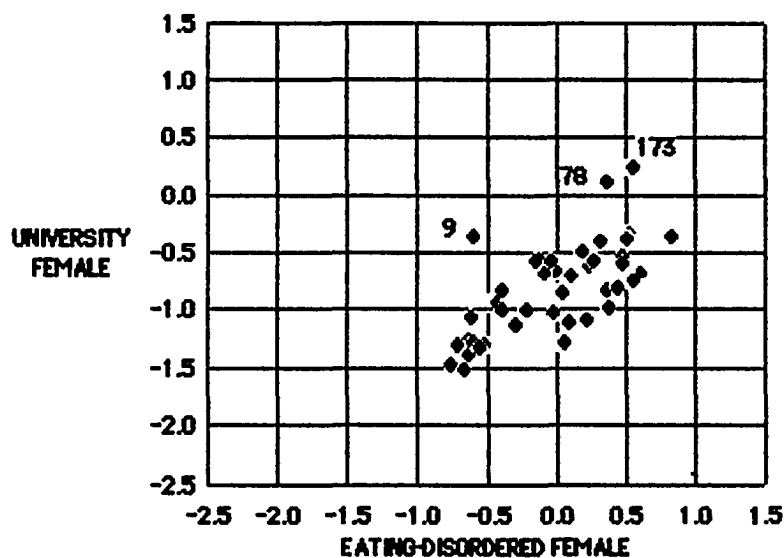


Note. Black diamonds indicate the item is scored "true." White diamonds indicate the item is scored "false."

Note. The composition of this clinical scale includes the following items: 2, 3, 7, 8, 10, 13, 14, 19, 25, 31, 33, 37, 38, 47, 48, 49, 53, 55, 60, 63, 65, 77, 83, 91, 94, 101, 102, 106, 108, 118, 120, 124, 130, 133, 136, 141, 150, 158, 160, 161, 162, 166, 168, 171.

Note. Items which are underlined indicate items which had a Z score difference between the two groups of at least one standard deviation.

**Figure 4** A scatterplot of the university female and eating-disordered female item Z scores on the MCMI scale Schizotypal-Schizoid (S).



Note. Black diamonds indicate the item is scored "true." White diamonds indicate the item is scored "false."

Note. The composition of this clinical scale includes the following items: 2, 5, 7, 9, 18, 26, 27, 36, 43, 45, 50, 51, 53, 54, 56, 58, 59, 67, 71, 72, 73, 76, 77, 78, 79, 82, 97, 99, 106, 108, 109, 110, 112, 114, 115, 117, 118, 132, 134, 136, 156, 162, 167, 173.

Note. Items which are underlined indicate items which had a Z score difference between the two groups of at least one standard deviation.

**Figure 5** A scatterplot of the university female and eating-disordered female item Z scores on the MCMI scale Borderline-Cycloid (C).

SECTION II: ASSESSMENT OF PSYCHOLOGICAL AND BEHAVIORAL  
CHARACTERISTICS OF WEIGHT-CLASSIFIED EATING-DISORDERED GROUPS

The most frequently used criteria for the diagnosis of anorexia nervosa or bulimia are those included in the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (American Psychiatric Association, 1980). According to these criteria, the diagnosis of anorexia is reserved for those who lose at least 25% of original body weight. The diagnosis of bulimia is reserved for those who do not lose the required amount of weight. Bulimia is further characterized by recurrent and uncontrollable ingestion of vast quantities of food and is often, though not necessarily, followed by self-induced purgation.

With the recognition that these eating disorders are multifaceted in causation, there has been increasing interest in the subclassification of these patients into more homogeneous groups. Interest has also focussed on the development of instruments to assess various components of disordered eating behavior which may differentiate among these groups.

The classification most frequently investigated among anorexics is that comparing restricting anorexics, those who maintain a low body weight with diet alone, to bulimic anorexics, those who exhibit periodic episodes of binge eating and self-induced purgation. The most commonly reported differences between these groups of anorexics are that the restrictors tend to be younger, less apt to have been premorbidly overweight, less hostile, and less concerned with body size and weight (Casper, Eckert, Halmi, Goldberg & Davis, 1980; Garner, Garfinkel & O'Shaughnessy, 1985a; Strober, Salkin, Burroughs & Morrell, 1982). The classification most frequently investigated among bulimics is that of comparing patients who only binge eat to those who vomit and/or purge. These two groups have been found to be similar (Grace, Jacobson & Fullager, 1985; Vandereycken & Pierloot, 1983).

Currently, most of the instruments which have been developed assess

particular behaviors specific to disordered eating such as dieting or restrained eating (Garner & Garfinkel, 1979; Herman & Mack, 1975; Polivy, Herman & Warsh, 1978; Stunkard, 1981) and bulimia or uncontrollable overeating (Gormally, Black, Datson & Rardin, 1982; Hawkins & Clement, 1980; Ondercin, 1979; Smith & Thelen, 1984).

Recently, a new instrument has been developed, the Eating Disorders Inventory (EDI) developed by Garner and Olmsted (1984), which assesses behaviors specific to eating-disordered behavior and other psychological aspects. In addition to scales concerning dieting (Drive for Thinness), uncontrolled eating (Bulimia), and attitudes of body shape (Body Dissatisfaction); five more general scales were included. These concerned feelings of inadequacy (Ineffectiveness); alienation and reluctance to form close relationships (Interpersonal Distrust); lack of confidence in identifying emotions and sensations of hunger and satiety (Interoceptive Awareness); excessive expectations for superior achievement (Perfectionism); and desire to retreat to a pre-adolescent state (Maturity Fears). These five psychological aspects have been reported to be fundamentally related to anorexia nervosa and bulimia (Bruch, 1961, 1962, 1964, 1969, 1970, 1973).

What has emerged from these efforts is a growing consensus that classification on the basis of consummatory practice and weight control behavior may have clinical relevance. Surprisingly, not much research has been undertaken in which the relationship of disordered eating to body weight has been investigated. In one study, differences due to low body weights (e.g., bulimics who had never weighed less than 25% of expected; bulimics who had weighed 25% less than expected but not less than 80% of expected; bulimics who had at one time weighed 80% or less of expected but were currently more than 80% of expected; and bulimics with a current weight of less than 80% of expected) were examined (Garner, Olmsted & Garfinkel, 1985). No studies have investigated differences due to high body weights. Therefore, the purpose of this study was to investigate

psychological and behavioral differences between overweight and normal weight bingers, overweight and normal weight vomiters/purgers, and underweight anorexics.

## Method

### Subjects

The subjects in this study were 196 patients in treatment for their eating disorders at a large midwestern hospital. Of these, 14 were diagnosed as anorexic and 182 were diagnosed as bulimic as defined by the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (American Psychiatric Association, 1980). The bulimic group was further differentiated on the basis of behavioral symptoms with 133 defined as bulimarexic, those who vomit and/or purge; and 49 defined as bulimic, those who rarely vomit and/or purge, but binge. The patients were individually diagnosed by a psychiatrist, a physician, and a psychologist. The three diagnosticians had to agree before the patient was diagnosed and included in this study. Additionally, the patients were classified as being within their normal weight range for age and height (normal weight), or as being 25% above (overweight), or 25% below (underweight), their normal weight range for age and height according to the Metropolitan Life Insurance Company Tables (1983). Of the 14 anorexics, all were classified as underweight. Of the 133 bulimarexics, 120 were classified as normal weight, and 13 were classified as overweight. Of the 49 bulimics, 13 were classified as normal weight, and 36 were classified as overweight. This classification resulted in five comparison groups: (1) overweight bulimics (OB), (2) normal weight bulimics (NB), (3) overweight bulimarexics (OBA), (4) normal weight bulimarexics (NBA), and (5) underweight anorexics (UA). Patients voluntarily signed a release authorizing the confidential use of their records for research purposes.

### Instrument

The instrument used in this study was the EDI (Garner & Olmsted, 1984), a 64-item self-report instrument which consists of eight scales: Drive for Thinness, Bulimia, Body Dissatisfaction, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness, and Maturity Fears. The content validation of this instrument and additional validation studies are reviewed in the Manual for Eating Disorder Inventory (Garner & Olmsted, 1984). Other than internal consistency measures of the scales, no other reliability information is provided.

### Procedure

The EDI was individually administered to the eating-disordered patients in treatment at the hospital as part of routine testing. At the time of admission, weight and height information was recorded.

### Data Analysis

Since three of the five comparison groups of interest were small ( $n < 30$ ), the statistical procedure used in this study was that recommended by Wolins (1982). In order to determine if the five eating-disordered groups differed significantly on any of the eight EDI scales, ten dummy variables were constructed contrasting: (1) overweight bulimics with normal weight bulimics (2) overweight bulimics with overweight bulimarexics, (3) overweight bulimics with normal weight bulimarexics, (4) overweight bulimics with underweight anorexics, (5) normal weight bulimics with overweight bulimarexics, (6) normal weight bulimics with normal weight bulimarexics, (7) normal weight bulimics with underweight anorexics, (8) overweight bulimarexics with normal weight bulimarexics, (9) overweight bulimarexics with underweight anorexics, and (10) normal weight bulimarexics with underweight anorexics. Each of the EDI scales was correlated with the dummy variable. Due to the large number of correlations which were examined with the resulting probability that several would be significant due to chance alone, a conservative significance level ( $p < .005$ ) was employed.



## Results

Demographic data for the five weight-classified eating-disordered groups are presented in TABLE 1. The two overweight groups are in their early thirties, and the underweight and two normal weight groups are in their early twenties. Though not statistically evaluated, an examination of the average ages of group membership revealed that the patients of normal weight were younger than the overweight patients, and the underweight anorexics were slightly younger than the patients of normal weight. Group members were close to the same height. The average weight of the underweight anorexics was 90.50 pounds. The average weights for the normal weight groups were 127.30 pounds (NBA) and 136.77 pounds (NB). The average weights for the overweight groups were 196.15 pounds (OBA) and 242.03 pounds (OB). The difference between the average highest and lowest weights reported was lowest for the normal weight groups, (NB 33.08 pounds) and (NBA 38.45 pounds), next highest for the underweight anorexic group (50.64 pounds), and highest for the overweight groups (OBA 78.77 pounds and OB 112.25 pounds).

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Insert TABLE 1 about here

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Only three of the EDI scales significantly differentiated between the contrasted groups: Desire for Thinness, Body Dissatisfaction, and Bulimia. The EDI mean scale score comparisons of the weight-classified groups are presented in TABLE 2. On the Drive for Thinness scale, the overweight bulimics had a significantly lower score than both the normal weight and overweight bulimarexics. On the Body Dissatisfaction scale the overweight bulimics had a significantly higher score than the normal weight bulimics, the normal weight bulimarexics, and the underweight anorexics. The underweight anorexics had a significantly lower score than the normal weight and overweight bulimarexics. On the Bulimia scale, the

underweight anorexics had a significantly lower score than the other four weight-classified eating-disordered groups.

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Insert TABLE 2 about here

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### Discussion

In this study, there were no significant differences between the normal or overweight bulimarexics which suggests that weight may not be an important classification variable for these patients. The bulimarexics did have significantly higher scores on the Drive for Thinness scale compared to the overweight bulimics, but the bulimarexics did not differ from the normal bulimics. Thus, related to the scales of the EDI, the only differences between bulimics and bulimarexics is that related to a drive for thinness.

Of the groups who differed on the subscales of Body Dissatisfaction, those who had higher body weights also had higher scale scores. Therefore, body weight seems to be related to body dissatisfaction.

Finally, those groups which had significantly higher scores on Bulimia also had significantly higher scores on Body Dissatisfaction. This suggests a potential interaction between the components of Body Dissatisfaction, Bulimia, and Drive for Thinness.

Not surprising is that the only three scales which significantly differentiated between the contrasted groups were Drive for Thinness, Body Dissatisfaction, and Bulimia. In three other studies in which the EDI was used to examine subgroup differences, similar results were reported.

Garner, Olmsted and Garfinkel (1985b) assessed the differences on the EDI scales among bulimic patients with different weights and weight histories. The only scale which differentiated among the groups was Interpersonal Distrust on which the bulimia nervosa patients had a higher score than the two bulimic groups (normal weight bulimics and anorexic

bulimics) with no history of emaciation.

Garner, Garfinkel and O'Shaughnessy (1985a) assessed differences on the EDI scales among restricting anorexics, bulimic anorexics, and normal weight bulimics. There were no significant differences among the three groups on Ineffectiveness, Perfectionism, and Maturity Fears. The only significant differences among the groups on Interpersonal Distrust and Interoceptive Awareness were that the bulimic anorexics had a higher score on Interpersonal Distrust than the normal weight bulimics and a higher score on Interoceptive Awareness than the restricting anorexics. There were several differences among the groups on Drive for Thinness, Body Dissatisfaction, and Bulimia.

Mickalide and Anderson (1985) examined the differences on the EDI among restricting anorexics, bulimic anorexics, normal weight bulimics with a history of anorexia, and normal weight bulimics without a history of anorexia. Although there were group differences on the scales of Drive for Thinness, Body Dissatisfaction, and Bulimia, there were no significant differences among the four groups on Ineffectiveness, Perfectionism, Interpersonal Distrust, and Maturity Fears. There was only one difference on the Interoceptive Awareness scale—normal weight bulimics with no history of anorexia scored significantly higher than the restricting anorexics.

The results of this study, combined with the results of others, provide support for the notion that the five EDI scales, which were originally developed to measure psychological aspects thought to be fundamentally related to anorexia nervosa and bulimia (Ineffectiveness, Interpersonal Distrust, Interoceptive Awareness, Maturity Fears, Perfectionism), do not have clinically utility for differentiating among subgroups of eating-disordered patients. There remains a need for a comprehensive and sensitive instrument for measurement and assessment of attitudes and behaviors to differentiate between eating-disordered subgroups.

**TABLE 1**  
**Demographic information on the weight-classified eating-disordered groups**

	NB (n=13)		OB (n=36)		NBA (n=120)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Age	23.08	7.08	34.03	8.84	22.71	6.81
Height	65.23	3.44	65.64	3.21	65.09	2.93
Weight	136.77	24.03	242.03	51.26	127.30	18.97
Highest Weight	149.31	26.16	261.17	57.30	154.97	68.29
Lowest Weight	116.23	26.99	145.69	27.00	114.50	40.46
	OBA (n=13)		UA(n=14)			
	$\bar{X}$	SD	$\bar{X}$	SD		
Age	32.38	10.05	22.07	5.97		
Height	64.85	2.48	64.29	2.92		
Weight	196.15	35.90	90.50	10.79		
Highest Weight	209.17	45.49	129.93	51.97		
Lowest Weight	123.83	15.89	85.38	10.28		

**TABLE 2**  
**EDI mean scale score comparisons of the weight-classified groups**

Subscale <sup>a</sup>	UA n=14 X	NBA n=13 X	OBA n=36 X	NB n=13 X	OB n=36 X
DT	11.57	13.69 <sub>b</sub>	15.08 <sub>a</sub>	11.15	9.83 <sub>ab</sub>
BD	11.07 <sub>bcd</sub>	17.52 <sub>ce</sub>	21.38 <sub>d</sub>	14.08 <sub>a</sub>	22.67 <sub>abe</sub>
MF	5.79	4.15	4.00	4.69	3.22
B	2.29 <sub>abcd</sub>	10.84 <sub>c</sub>	12.38 <sub>d</sub>	7.23 <sub>a</sub>	10.22 <sub>b</sub>
I	9.79	10.51	9.38	7.08	9.89
IA	7.86	11.39	9.92	8.77	10.75
ID	7.07	5.94	5.38	4.31	6.03
P	6.86	7.19	9.85	6.00	7.50

<sup>a</sup>DT-drive for thinness; BD-body dissatisfaction; MF-maturity fears; B-bulimia; I-ineffectiveness; IA-interoceptive awareness; ID-interpersonal distrust; P-perfectionism.

Note. Row means sharing a common subscript are significantly different ( $p < .005$ ).

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SECTION III: ASSESSMENT OF PHYSIOLOGICAL, PSYCHOLOGICAL,  
AND BEHAVIORAL CHARACTERISTICS WHICH DIFFERENTIATE AMONG  
DIAGNOSED EATING-DISORDERED, PSYCHIATRIC, AND MEDICAL PATIENTS

The Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM III) (American Psychiatric Association, 1980) provides criteria for the eating disorders of anorexia and bulimia. The criteria listed for anorexia nervosa include an intense fear of becoming obese, a disturbance of body image, a weight loss of at least 25% of original body weight, a refusal to maintain a normal body weight for age and height, and the absence of any physical illness that would account for the weight loss. The criteria listed for bulimia include recurrent episodes of rapid food consumption, awareness of an abnormal eating pattern, depressed mood following eating binges, eating episodes not due to anorexia nervosa or any known physical illness, and at least three of the following: (1) consumption of high-calorie foods during a binge; (2) inconspicuous eating during a binge; (3) termination of the binge due to abdominal pain, social interruption, or self-induced vomiting; (4) repeated attempts to lose weight by dieting, vomiting or abuse of cathartics or diuretics; and/or (5) frequent weight fluctuations greater than ten pounds due to fasting and bingeing.

Several aspects are thought to contribute to the development and maintenance of these multifaceted disorders. The shift in Western cultural values toward a thinner ideal standard for women is thought to have contributed to an increase in extreme dieting practices among women (Garner, Garfinkel & Olmsted, 1983; Garner, Garfinkel, Schwartz & Thompson, 1980). Dieting has been linked to binge eating (Leon, Carroll, Chernyk & Finn, 1985; Wooley & Wooley, 1985) and two lines of evidence supporting this link have been reported in the literature. One is cognitive and suggests that when dieters break their stringent dietary rules, they become disinhibited and are more likely to binge in response to emotional

and/or external cues (Polivy, Herman, Olmstead & Jazwinski, 1984). The other is physiological and suggests that when individuals reduce their weight to below their biological set-point, they may become physiologically predisposed to binge (Keeseey, 1980; Nisbett, 1972). A physiological response which has been identified as a measure of dropping below a suboptimal body weight is cold intolerance (Keys, Brozek, Henschel, Mickelson & Taylor, 1950).

Individuals who place importance on thinness become anxious after bingeing. To reduce this anxiety they vomit (Fairburn, 1981; Rosen & Leitenberg, 1982) This vomiting may intensify hunger by keeping weight at a reduced level (Russell, 1979). Exercise is also used as a means of burning calories (Garfinkel & Garner, 1982), and anorexics often use this to excess (Fairburn & Cooper, 1982).

Reports of developmental obesity occurring in females who later have disordered eating patterns, have prompted investigators to question whether these behaviors are related to attempts to control obesity. Premorbid obesity, or a history of weight problems, have been reported among both bingers (Crisp & Bhat, 1982; Herzog, 1982a,b) and vomiters and purgers (Fairburn & Cooper, 1982).

Several assessment instruments have been developed to assess particular behaviors specific to disordered eating such as dieting or restrained eating (Garner & Garfinkel, 1979; Herman & Mack, 1975; Polivy, Herman & Warsh, 1978; Stunkard, 1981) and bulimia or uncontrollable eating (Gormally, Black, Datson & Rardin, 1982; Hawkins & Clement, 1980; Ondercin, 1979; Smith & Thelen, 1984). An instrument developed to assess both eating disorders and other psychological aspects is the Eating Disorders Instrument (EDI) written by Garner and Olmsted (1984). In addition to assessing bulimia, drive for thinness, and body dissatisfaction, it contains five psychological scales for assessing perfectionism, ineffectiveness, interpersonal distrust, interoceptive

awareness, and maturity fears.

Recently, a new instrument, the Disordered Eating and Weight Control Inventory (DEWCI) was developed by Lundholm and Wolins (in press) to assess many of the characteristics previously discussed. Included are ten scales for assessing a preoccupation with a desire to be thinner (Desire To Be Thinner), the avoidance of particular foods and calorie counting (Restrained Eating), the tendency to eat in response to emotional upset (Emotional Cues), the tendency to eat in response to the presence of food regardless of hunger (External Cues), a history of weight control problems (History of Being Overweight), a problem with keeping warm (Cold Intolerance), a concern about being too thin (Concern About Being Too Thin), the tendency to engage in exercise (Exercise Behavior), the tendency to use vomiting to control weight (Vomiting), and the tendency to use laxatives to control weight (Laxative Use). Since a clearer understanding of the relationship of these aspects to disordered eating might enhance the understanding of these disorders, this study was undertaken. The purpose was to investigate if subgroups of eating-disordered patients differed on any of these characteristics. Also of interest was to determine if any of these aspects would differentiate eating-disordered patients from psychiatric or medical patient groups.

## Method

### Subjects

The subjects were 99 female eating-disordered patients receiving either in-patient or out-patient treatment for their eating disorders, 27 female psychiatric controls (PC) receiving either in-patient or out-patient psychiatric treatment, and 24 female medical controls (MC) receiving out-patient medical health treatment, and. All patients received treatment at a large midwestern hospital. Of the 99 eating-disordered

patients, 19 were diagnosed as anorexic (A), and 80 were diagnosed as bulimic as defined by the DSM III (American Psychiatric Association, 1980). The bulimic group was further differentiated on the basis of behavioral symptoms with 68 defined as bulimarexic (BA), those who vomit and/or purge; and 12 defined as bulimic (B), those who rarely vomit and/or purge, but binge. These eating-disordered patients were individually diagnosed by a psychiatrist, a physician, and a psychologist. The three diagnosticians had to agree before the patient was given a diagnosis and included in this study. The 27 psychiatric patients were diagnosed as having major depressive disorders, panic disorders, dysthymic disorders, or personality trait disorders. Each patient was diagnosed by the psychiatrist or psychologist. The 24 female patients were receiving treatment by a general practitioner. Neither the female medical nor the female psychiatric patients were known to have eating disorders.

#### Instrument

The instrument used in this study was the Disordered Eating and Weight Control Inventory (DEWCI) developed by Lundholm and Wolins (in press). This instrument is a 46-item instrument which consists of ten scales: Desire to be Thinner (DT), Restrained Eating (RE), Emotional Cues (EMC), External Cues (EXC), History of Being Overweight (HO), Cold Intolerance (CI), Concern About Being Too Thin (CT), Exercise Behavior (EB), Vomiting (VT), and Laxative Use (LX). The original instrument was factor analyzed on a sample of 502 female university students. Of the ten factors identified, six had internal consistency estimates above .80 (DT, EXC, CI, EB, VT, LX); three had estimates above .60 (RE, EMC, CT); and one had an estimate of .55 (HO).

#### Procedure

The eating-disordered females received individual administration of the DEWCI as part of pre-treatment testing. The psychiatric and medical

patients were given the opportunity to complete the DEWCI on a voluntary basis, while in waiting rooms of their psychiatrist, psychologist, or physician.

#### Data Analysis

Since four of the five comparison groups were small ( $n < 30$ ) the statistical procedure used was that recommended by Wolins (1982). Ten dummy variables were constructed contrasting: (1) anorexics with bulimics, (2) anorexics with bulimarexics, (3) bulimics with bulimarexics, (4) anorexics with psychiatric controls, (5) anorexics with medical controls, (6) bulimics with psychiatric controls, (7) bulimics with medical controls, (8) bulimarexics with psychiatric controls, (9) bulimarexics with medical controls, and (10) psychiatric controls with medical controls. Each of the DEWCI scales was correlated with the dummy variable. Due to the large number of correlations which were examined, with the resulting probability that several would be significant due to chance alone, a conservative level of significance ( $p < .005$ ) was employed.

#### Results

Demographic data for the three eating-disordered groups and the psychiatric and medical patients are presented in TABLE 1. The average age of the eating-disordered patients was the 20's, and the average age of the psychiatric and medical patients was the 30's. The average weight of the anorexic group was 101.84 pounds, of the bulimarexic group was 128.87 pounds, of the bulimic group was 201.17 pounds, of the psychiatric control group was 142.74 pounds, and of the medical control group was 143.50 pounds.

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Insert TABLE 1 about here

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All ten of the DEWCI scales significantly differentiated between the contrasted groups. The DEWCI mean scale score comparisons of the anorexic, bulimarexic, bulimic, psychiatric, and medical groups are presented in TABLE 2. On the Desire To Be Thinner scale, the eating-disordered groups had significantly higher scores than either the psychiatric or medical group. The bulimarexics also had a significantly higher score than the anorexics. On the Restrained Eating scale, both the anorexics and bulimarexics had significantly higher scores than the psychiatric or medical groups. On the Emotional Cues scale, the bulimic and bulimarexics had significantly higher scores than the anorexic, psychiatric, and medical group. On the External Cues scale, the bulimics and bulimarexics had significantly higher scores than the anorexics and psychiatric groups. Also, the medical group had a higher score than the anorexics, and the bulimarexics had a higher score than the medical group. On the History of Being Overweight scale, the bulimics had a higher score than the anorexics, and both the bulimic and bulimarexic groups had higher scores than the medical group. On the Cold Intolerance scale, the bulimarexics had a higher score than the psychiatric group, and the anorexics and bulimarexics had a higher score than the medical group. On the Concern About Being Too Thin scale, the anorexic group had a significantly higher score than all the other groups. The only significant difference on the Exercise Behavior scale was that the anorexics had a higher score than the medical group. On the Vomiting scale, the bulimarexics had a significantly higher score than the bulimics and anorexics, and the anorexics and bulimarexics had significantly higher scores than the psychiatric or medical groups. The only significant difference on the Laxative Use scale was that the bulimarexics had a significantly higher score than the medical group.

## Discussion

The results indicate that compared to the psychiatric and medical patient groups, all of the eating disordered subgroups had higher scores on the Desire to Be Thinner scale. This elevated score may be linked to the societal pressures for thinness. Since all the patients in this study were female, and since both the anorexic and bulimarexic groups had a lower average weight than the psychiatric or medical patients, it is unclear as to why the eating-disordered females would have a stronger desire to be thin.

None of the eating-disordered groups differed from each other on the Restrained Eating scale, however, both the anorexic and bulimarexic groups had significantly higher scores on this scale when compared with the psychiatric and medical groups. Restrained eating is thought to contribute to eating in response to external and/or emotional cues (Leon, Carroll, Chernyk & Finn, 1985; Wooley & Wooley, 1985), and this notion was supported in this study. The eating-disordered groups reported eating in response to both of these cues.

Since eating in response to these cues may be due to being below a suboptimal weight (Keeseey, 1980; Nisbett, 1972) and a physiological response indicative of being at too low a body weight is cold intolerance, the responses on the Cold Intolerance scale were examined. There were no differences between any of the eating-disordered groups or between the eating-disordered groups and the psychiatric group. Both the anorexic and bulimarexic groups did have higher scores on Cold Intolerance compared to the medical group. A speculation concerning this finding is that both the anorexic and bulimarexic eating-disordered groups, and the psychiatric group, may be maintaining body weights below their biological set-points. To further examine this notion, the History of Being Overweight scale was examined.

Compared to the anorexics, the bulimics had a higher score on the History of Being Overweight scale. This fits with current literature that suggests many bulimics have histories of premorbid obesity (Crisp & Bhat, 1982; Herzog, 1982a, b). Both the bulimic and bulimarexic groups also had higher scores on the History of Being Overweight scale compared to the medical patients, but not compared to the psychiatric patients. Again, although speculative, this lends additional support to the notion that both eating-disordered females and psychiatric females may be predisposed to having a higher body weight and may currently be at a biologically suboptimal body weight. This certainly would account for no differences between the groups on the History of Being Overweight scale.

Another area of interest in this study was examining the differences between these groups on the behaviors used to prevent or control weight gain. Compared to the anorexic, bulimic, psychiatric, and medical groups, the bulimarexics had a significantly higher score on the Vomiting scale. Compared to the medical group, the bulimarexics had a significantly higher score on Laxative Use. The anorexics also had significantly higher scores on the Vomiting scale compared to the psychiatric and medical control groups. These findings are not surprising since these behaviors are characteristic of eating-disordered patients.

There were no differences between the eating-disordered groups related to exercise behavior. This finding was surprising since research suggests that anorexics exercise much more rigorously than bulimics (Fairburn, Cooper & Cooper, 1986). The anorexic and bulimarexic groups did have higher scores on the Exercise Behavior scale than the medical patients.

A surprising finding in this study was that the anorexics had a significantly higher score on the Concern About Being Too Thin scale as compared to both the eating-disordered groups and the psychiatric and medical groups. Researchers consistently report that anorexics have a



distorted view of their emaciated bodies in the direction of being too large (Casper, Eckert, Halmi, Goldberg & Davis, 1980; Slade & Russell, 1973). The anorexics in this study appeared to be aware of their thin bodies.

All of the DEWCI scales significantly differentiated between the eating disordered, psychiatric, and medical patients. This instrument may therefore have utility as an assessment device which could be used to distinguish between subgroups of eating-disordered patients, between psychiatric patients with and without eating disorders, and between individuals with and without eating disordered problems. Future research to determine the utility of this instrument is therefore recommended.

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**TABLE 1**  
**Demographic information on the eating-disordered, psychiatric control and medical control groups**

	Age		Weight		Height	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
A (n=19)	24.00	7.04	101.84	15.14	65.11	2.28
BA (n=68)	21.62	5.17	128.87	23.02	65.40	2.04
B (n=12)	27.83	7.57	201.17	46.55	66.25	2.86
PC (n=27)	35.37	9.74	142.74	32.52	64.56	2.22
MC (n=24)	37.67	8.32	143.50	33.33	64.58	4.87

**TABLE 2**  
**DEWCI mean scale score comparisons of the anorexic, bulimarexic, bulimic, psychiatric control, and medical control groups**

Subscale <sup>a</sup>	A n=14 $\bar{X}$	BA n=68 $\bar{X}$	B n=12 $\bar{X}$	PC n=27 $\bar{X}$	MC n=24 $\bar{X}$
DT	18.42 <sub>abe</sub>	21.79 <sub>adg</sub>	21.08 <sub>cf</sub>	14.17 <sub>bcd</sub>	13.93 <sub>efg</sub>
RE	17.11 <sub>ac</sub>	16.97 <sub>bd</sub>	14.00	12.54 <sub>ab</sub>	11.22 <sub>cd</sub>
EMC	13.05 <sub>ab</sub>	21.13 <sub>ade</sub>	21.58 <sub>bcf</sub>	14.71 <sub>cd</sub>	14.59 <sub>ef</sub>
EXC	11.37 <sub>abe</sub>	20.25 <sub>adf</sub>	21.00 <sub>bc</sub>	14.50 <sub>cd</sub>	16.19 <sub>ef</sub>
HO	7.00 <sub>a</sub>	9.13 <sub>c</sub>	10.33 <sub>ab</sub>	7.21	6.19 <sub>bc</sub>
CI	17.74 <sub>b</sub>	17.65 <sub>ac</sub>	16.33	13.63 <sub>a</sub>	12.52 <sub>bc</sub>
CT	17.68 <sub>abcd</sub>	11.38 <sub>a</sub>	8.17 <sub>b</sub>	9.17 <sub>c</sub>	9.48 <sub>d</sub>
EB	10.58 <sub>a</sub>	9.24	6.17	7.17	6.56 <sub>a</sub>
VT	8.53 <sub>abd</sub>	16.07 <sub>acef</sub>	6.33 <sub>f</sub>	4.67 <sub>bc</sub>	4.33 <sub>de</sub>
LX	5.00	6.79 <sub>a</sub>	4.33	4.54	3.56 <sub>a</sub>

<sup>a</sup>DT—desire to be thinner; RE—restrained eating; EMC—emotional cues; EXC—external cues; HO—history of being overweight; CI—cold intolerance; CT—concern about being too thin; EB—exercise behavior; VT—vomiting; LX—laxative use.

Note. Row means sharing a common subscript are significantly different ( $p < .005$ ).

APPENDIX  
SCALES OF THE DISORDERED EATING AND WEIGHT CONTROL INVENTORY (DEWCI)

Desire to Be Thinner (DT)

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1. I am preoccupied with a desire to be thinner.
  11. I feel extremely guilty after eating.
  21. I hate myself when I gain weight.
  31. I'm self-conscious about my weight.
  38. I am preoccupied with the thought of having fat on my body.
- 

Restrained Eating (RE)

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2. I count calories.
  12. I am aware of the calorie content of foods that I eat.
  22. I particularly avoid foods with a high carbohydrate content (e.g. bread, potatoes, rice, etc.).
  32. I avoid foods with sugar in them.
  39. I engage in dieting behavior.
  43. I write down everything I eat.
- 

Emotional Cues (EMC)

---

3. When I feel lonely eating makes me feel better.
  13. Eating helps me relieve depression.
  23. Eating helps me relieve tension.
  33. When I feel rejected I eat.
  40. Eating makes me feel relaxed.
  44. When I get nervous I eat.
- 

External Cues (EXC)

---

4. Even if I'm not hungry if something tastes good I'll eat it.
  14. Even if I'm not hungry if something smells good I'll eat it.
  24. Even if I'm not hungry if something looks good I'll eat it.
  34. I eat when I am not hungry.
  45. Just a taste of something delicious makes me want to eat.
-

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**History of Being Overweight (HO)**

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- 5. When I was in high school I was overweight.
  - 15. When I was in elementary school I was overweight.
  - 25. I have a weight control problem.
- 

**Cold Intolerance (CI)**

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- 6. I get chilled easily.
  - 16. I have trouble keeping warm.
  - 26. I feel cold.
  - 35. My hands feel cold.
  - 41. My feet feel cold.
- 

**Concern About Being Too Thin (CT)**

---

- 7. When I gain a few pounds I feel more competent.
  - 17. Other people think that I'm too thin.
  - 27. I lose weight easily.
  - 36. I feel that others would prefer if I ate more.
  - 42. When I gain a few pounds I feel more in control.
  - 46. When I gain a few pounds I feel more attractive.
- 

**Exercise Behavior (EB)**

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- 8. I exercise at least three times a week.
  - 18. I engage in exercise.
  - 28. I follow a scheduled program of exercise.
- 

**Vomiting (VT)**

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- 9. I vomit to control my weight.
  - 19. I vomit after I have eaten.
  - 29. I vomit after I eat too much.
  - 37. I have the impulse to vomit after meals.
- 

**Laxative Use (LX)**

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- 10. I take laxatives to control my weight.
  - 20. I exceed the recommended dosage of laxatives.
  - 30. I take laxatives.
-



### Summary

Identified and examined in this dissertation were psychological, physiological, and behavioral aspects thought to contribute to the development and maintenance of disordered-eating patterns. Three studies were undertaken.

In the first study, the extent and nature of psychological aspects related to diagnosed female eating-disordered patients were examined and a determination made as to how those aspects differed from females without eating problems. Subjects were 265 students and 173 eating-disordered patients diagnosed as anorexic, bulimic or bulimarexic. The Millon Clinical Multiaxial Inventory was administered, and item differences between the groups were investigated. None of the items significantly differentiated between the bulimics and bulimarexics. Only two items significantly ( $p < .005$ ) differentiated the anorexics from the bulimics, and anorexics from the bulimarexics. Of the items, 64% significantly ( $p < .005$ ) differentiated the eating-disordered patients as a group, from the students. In order to determine which items were most discriminating the range of Z scores between the groups were examined and those which differed by at least one standard deviation identified. Examination of the content of the identified items revealed that the eating-disordered females were socially withdrawn and depressed.

In the second study, psychological and behavioral differences between weight-classified eating-disordered patients were investigated. Subjects were 196 patients, classified as either overweight or normal weight bulimic, overweight or normal weight bulimarexic, or underweight anorexic. The Eating Disorders Instrument (EDI) was administered. Scale score differences between the groups were investigated by constructing ten dummy variables contrasting the groups and correlating the scales with the dummy variables. Of the EDI scales, three significantly ( $p < .005$ ) differentiated between the contrasted groups: Desire for Thinness, Body Dissatisfaction, and Bulimia. Indicated by the

results is that the five EDI scales developed to measure psychological aspects may not have clinical utility.

In the third study, investigation was focused on finding if subgroups of eating-disordered patients differed on measures of physiological, psychological, and behavioral aspects, and determining if these aspects would differentiate female eating-disordered patients from female psychiatric, or medical patients. Subjects were 99 eating-disordered females diagnosed as anorexic, bulimic, or bulimarexic; 27 psychiatric controls, and 24 medical controls. The Disordered Eating and Weight Control Instrument (DEWCI) was administered, and scale score differences investigated, using the data analysis procedure of study two. All of the DEWCI scales significantly ( $p < .005$ ) differentiated between the eating-disordered, psychiatric, and medical patients. This instrument may therefore have clinical utility.

A consistent and interesting finding across all three studies was a lack of differentiation among subgroups of eating-disordered patients, particularly on psychological measures. This lack of differentiation lends support to the notion that there is only one eating disorder and that differential patterns of disordered eating and weight control may be signs of chronicity. In the early stages of the eating disorder, patients may engage in extreme dieting and restrained eating. As the eating disorder progresses, the patients may experience bouts of bulimia and eventually resort to vomiting and/or purging for weight control.

It does not seem sensible to assign diagnostic labels to patients, when there appears to be so much overlap of behavior. If the labels are meant to permit communication concerning the disorders across systems, and to enhance the ability to treat and study clients with these disorders, then a clearer understanding of the differentiation among diagnostic categories is necessary. Otherwise, a revision of the current classification system seems necessary.

### Recommendations for Future Study

Based on the results reported in this dissertation, the psychological aspects most related to disordered eating are social withdrawal, depression, body dissatisfaction, a desire to be thinner, and a concern about being too thin. The physical and physiological aspects most related to disordered eating are age of onset, current weight and weight history, and cold intolerance. The behavioral aspects most related to disordered eating are bulimia or binge eating, restrained eating, eating in response to external and/or internal cues, exercise behavior, vomiting, and laxative use.

A logical and important next step for future research is to develop an instrument capable of assessing all of these aspects. Items related to these aspects could be included in one instrument, administered to a large sample of eating-disordered patients, and factor analyzed. If the aspects were clearly evident in the factor structure, construct validation of this instrument would be evidenced.

Criterion related validity could be established by providing evidence of congruence between clinicians' ratings of extent of disordered eating, and the subjects' scores on the factors. If interrater reliability of diagnosis was high, criterion related validity would be evidenced if subjects classified as eating-disordered had significantly higher scores on the factors, than those classified without eating disordered difficulties.

Additional validation could be accrued by administering the instrument to individuals currently receiving treatment and to those who were successfully treated. It is predicted that those currently receiving treatment would have significantly higher scores than those who were successfully treated.

### Limitations

The data for this dissertation were collected from two institutions, a large midwestern hospital, and a large midwestern university. Generalizations drawn from the results are therefore limited to individuals within these populations. Data collected on samples at varied geographic locations would allow for greater generalizability.

All three instruments used in this research relied on self-reports. Thus, the information collected was limited to the extent of subject self-understanding and the willingness to share this information honestly.

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