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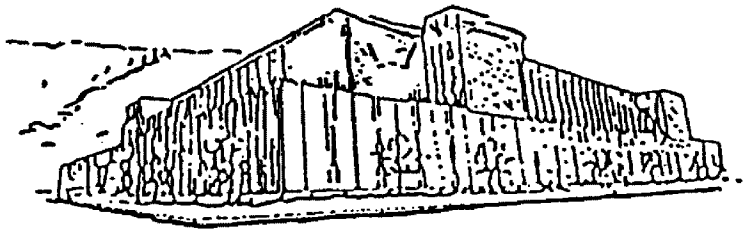

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A Study on the Prevalence
of Predisposing Factors
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Among
The University of Montana
Female Student-Athletes

By

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Bulimia Nervosa: A study on the prevalence of the predisposing factors and the disease itself among The University of Montana freshman female student-athletes.

Committee Chair: Dr. Kathleen Miller

Bulimia Nervosa is an eating disorder that is prevalent among the general population and has a characteristic vicious cycle of binge eating and purging. Bulimia Nervosa, when placed into the female intercollegiate sport arena can be particularly devastating if not deadly. Through the Eating Disorder Inventory research design eight predisposing factors (sub scales) of the disease were measured to highlight "at risk" athletes. The sub scales were Drive for Thinness (DT), Bulimia (B), Body Dissatisfaction (BD), Ineffectiveness (I), Perfectionism (P), Interpersonal Distrust (ID), Interoceptive Awareness (IA), and Maturity Fears (MF). These sub scales are divided into two categories, psychological {P, ID, IA, MF}, and Behavioral {B, BD, DT, I}. This study first measured the effectiveness of the EDI at The University of Montana by testing two female athletes who were diagnosed Bulimic. These two subjects' mean raw scores tabulated into the 1st standard deviation of the standardized score for eating disorder patients or positively higher. After the EDI was found effective for the population to be tested it was given to the test sample. Results were found when the groups scores were taken individually and checked for predisposing "at risk" traits, but when the groups means were taken the findings dropped considerably. This is related to the low number of the group and disparity of the scored answers.

The individual findings support the use of the EDI as the first step in the diagnostic process to identify "at risk" female student athletes. As these individuals are identified they should be referred to further counseling and evaluation by specialists in the clinical psychology and nutritional fields. Furthermore, percentile results from Group 2 findings support adding the EDI to the Athletic Training Health form for all incoming freshmen women. The high degree of predisposing trait incidence shown by the sample group could represent a much larger problem in the entire population.

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First and foremost I would like to thank my chair, Dr. Kathleen Miller, for the support, direction, and incredible amount of patience it took to deal with a product of New York secondary education. Without you this paper would still be a glimmer in the mind's eye.

I would also give my gratitude to Drs. Lew Curry and Gail Bruce-Sanford. Their expertise in their respective fields made the project much easier and the resulting product more effective.

Finally I would like to thank the women who make up The University of Montana's varsity athlete population. This project was completed through the donation of your time and I hope that you will benefit from the findings. It has truly been a privilege to work with you. Go Griz!

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CHAPTER 1

Introduction

In recent years research revealed that Bulimia Nervosa has reached dangerous proportions in the general college population. Bulimia is estimated to be prevalent in 10% of college students. Differentiating male/ female research speculates that 18% of female students suffer from the disease (Burches- Miller & Black, 1988). Studies have shown that the competitive athletic population in this group is at even more risk to develop the disorder (Brooks-Gunn, Warren, & Hamilton, 1987; Burches-Miller et al., 1988; Pasman & Thompson, 1988). Sundgot-Borgen (1993) stated that the highest prevalence of eating disorders is in female athletes competing in sports where physical leanness, specific weight, or both, are considered important for performance. Female intercollegiate athletes, especially gymnasts and ballet dancers, are often under internal and external stress to meet set social and judging standards as well maintaining the body musculature specific to their sport. The resulting combined influence of the college social setting and intercollegiate competition inflict a great deal of pressure on the psyche of the female college athlete. Unfortunately, the intercollegiate sport environment, with its emphasis on achieving success and the value placed on personal weight or appearance, is an ideal setting for the student athlete to develop patterns of hazardous weight loss practices. These include attitudes towards weight and shape that prove to be detrimental to their well being (Seime & Damar, 1991).

Women's intercollegiate athletics attracts individuals who are perfectionists or over-achievers (Borgen & Corbin, 1987). The female intercollegiate athlete is an elite athlete whose personality is very goal oriented, the one track mind persona. This

persona, when accompanied by fear of failure, coachs' pressure, and the competition for scholarships, puts the athlete at risk of eating disorders, especially Bulimia Nervosa. With high achievement orientations and perfectionism being cited repeatedly as individualistic risk factors for eating disorders (Seime et al., 1991), women athletes are earmarked for Bulimia Nervosa. In 1990 the NCAA sent a one page survey to its 803 member institutions as a follow up eating disorder study (Dick, 1991). Its purpose was to see if any member of the institutions athletic teams experienced an eating disorder from 1988-90. Four hundred ninety one of the 803 schools respond to the survey, with 313 reporting "that at least one eating disorder of a student athlete had occurred." (Dick, 1991, p.138). Of the 313 schools responding 810 reports, or 93% were female cases [See Appendix 1A, Dick, 1991]. Another survey [Appendix 1B] done by Rosen, McKeag, Hough, and Curly (1986) also showed a high number of pathogenic weight control measures used among female athletes. The authors administered a questionnaire to 182 collegiate female athletes. Results from the study showed that 32% practiced at least one pathological weight control behavior. These pathogenic behaviors are also identified [Appendix B]. The measurable psychological profile of a female athlete with Bulimia this paper may present will give these universities a tool to help catch and prevent the onset and spreading of Bulimia Nervosa.

Statement of Problem

The question this paper will try to answer is can college freshmen female athletes be categorized at risk of Bulimia Nervosa through a set of eight psychological profiles based on the Eating Disorder Inventory (EDI) Test? Large numbers of female athletes, entering college for the first time, are placed under enormous strain to succeed in the sports and social setting. Seime et al., (1991) recognized that

maximum athletic performance is intimately related to the physical conditioning of the athlete, including the decrease of body fat. Smith (1980, p.23) stated that "large numbers of young people are seriously committed to highly competitive sports programs while coaches and athletes are aware of the advantages of reducing fatness for optimal athletic performance."

Significance of Study

This research will be valuable because once the psychological profile for an athlete with Bulimia Nervosa is known it can be used at any 1-A or I-AA institution. The research is only applicable for 1-A or 1-AA universities because athletes at this target population, like the testing population are sport scholarship qualified. With the further enforcement of Title -IX at these colleges and universities the number of women athletes are growing as a result of scholarship equality. The problem of eating disorders, especially Bulimia Nervosa, is rampant in women's collegiate athletics. If the study shows a significant number of female freshman athletes are at risk of the disease, or at risk of its subcategories, a proposal will be written to add the EDI to the freshman athletic history form given at the Rhinehart Athletic Treatment Center. According to University of Montana nutritionist's Dr. Marilyn Peterson it would be " much more beneficial from the nutritionists standpoint if subjects could be educated and worked with before the onset of Bulimia when the disease has already reached its acute phase". Bulimia Nervosa is a highly secretive disease and when it is at its acute stage almost all athletes refuse to talk about it. A psychological profile completed before the athlete has been grasped by the disease would be of enormous value to nutritionists, coaches, and athletic trainers alike.

Delimitations

1. All subjects will be female athletes who compete intercollegiately at The

University of Montana. The University of Montana is a Division 1-AA institution with a population of approximately 11,500 students and is a member of the Big Sky conference. The EDI will first be given to 2 UM female athletes, by the tester in a closed room, who have been diagnosed with having Bulimia Nervosa to show test validity at The University of Montana.

2. The female athletes who are to be compared to the psychological profile will be in their freshman year at The University of Montana ages 18-19 competing in volleyball, soccer, basketball, tennis, or track/cross country.

3. All female athletes come from the pacific northwest area, these include the states of Montana, Washington, Oregon, and Idaho.

4. The instrument used in the measuring will be the Eating Disorder Inventory (EDI). Garner, Olmstead, and Polivy (1983) developed this 64 , one to six point, question self-reporting examination. The test functions to assess a spectrum of psychological and behavioral traits common in people with Bulimia Nervosa. The inventory is divided into eight sub scales, four psychological and four behavioral that set measurable qualifications of the disease.

Definitions

Bulimia Nervosa: A eating disorder characterized by excessive binge eating episodes followed by the purging of the food.

Pathogenic weight control behaviors: Self-induced vomiting, excessive exercise, binging more then twice per week, the use of laxatives and diuretics to reduce weight (Rosen et al., 1986).

Diuretics: Chemicals, natural or synthesized, that increase the output of urine.

Hypokalemia: Potassium deficiency resulting from chronic laxative/ diuretic abuse.

Dryouts: Crash weight loss plan whereby the complete elimination of carbohydrates and salt from the diet is used to lose weight.

Dichotomous Thinking: The thought processes in which a gorge or starve mentality is realized. Most Bulimic subject-patients are thought to use this train of thought when food cues are concerned.

Chapter 2

Review of Literature

Psychology of Bulimia Nervosa

Prior to 1970 Bulimia Nervosa was not diagnosed that often in the clinical setting. A decade later it was the eating disorder most diagnosed by clinicians (Polivy & Herman, 1993). Bulimia is a complex eating disease where subjects react to personal and environmental stress by eating large amounts of food in a short duration then purging it from their bodies. The word *Bulimia* itself is derived from ancient Greek meaning insatiable appetite and the foods usually binged upon are usually of high calorie, high sugar content. The Diagnostic and Statistical Manual (DSM) IV of the American Psychiatric Association classifies the disease as:

A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:
   1) Eating, in a discrete amount of time (e.g. within a two hour period) an amount of food that is definitely larger than what a similar person would eat under similar circumstances.

   2) A sense of lack of control over eating during the episode, e.g. a feeling that one cannot stop eating or control what or how much one is eating.

B. Recurrent, inappropriate compensatory behavior in order to prevent weight such as; self- induced vomiting, misuse of laxatives, diuretics or other medications, fasting, or excessive exercise.

C. That binge eating and compensatory behaviors occur, on average, at least twice per week for three months.

D. Self evaluation is unduly influenced by body shape and weight.

E. The disturbance does not occur exclusively during episodes of Anorexia Nervosa.

(APA DSM-IV 1993, p.549)

Physical Complications

Bulimia Nervosa patients are categorized into two separate categories, purging and non-purging. Purging subjects regularly engage in self induced vomiting or misuse diuretics and laxatives. The non-purging type patient uses negative behaviorisms such as excessive exercise or fasting instead of self-induced purging (Polivy et al., 1993). The disease can be quite harmful physically to the subject if not treated. Medical signs and symptoms of the disease in females include 1) menstrual irregularities, 2) dental and gum disease, 3) swollen parotid glands, 4) gastrointestinal problems, and 5) electrolyte imbalances and dehydration (Woolsey, 1994).

Psychological Characteristics

The disease of Bulimia Nervosa has many causes and contributors and while there are definitely genetic predisposers that can help cause the disease this paper will focus on the psychological etiology. Several studies have shown a characteristic profile of emotional and psychological problems accompanying bulimarexic practices (Hawkins & Clement, 1984). Congruencies in the study's results gave a remarkably consistent set of psychological characteristics. These are as follows.

1) Morbid fear of weight gain.
2) A fear of losing control of eating/ weight and preoccupation with food and eating (see DSM-IV classifications).
3) Body image dissatisfaction.
4) Low self esteem despite objectively high levels of intelligence, social competence, and achievement.
5) Overdependence on approval from others.
6) Intense feelings of helplessness about overcoming the disorder, accompanied by a passive dependent social and problem solving style.
7) Under assertiveness.
8) A constellation of depressive features, including subjective depression, suicidal ideation, loneliness, social anxiety and withdrawal. Depressive symptoms appear to vary in significance

with the severity of the eating disorder (Orleans & Barnett, 1984, p.149).

Psychology of Society

Accompanying these characteristics, researchers such as Boskind-Lodahl (1976) and Orbach (1985) have theorized that Bulimia Nervosa is also related to the overall complexities of role conflict for women in western society. Palazzoli (1978) agreed with Boskind-Lodahl saying:

> Women are expected to be beautiful, smart and well-groomed and to devote a great deal of time to their personal appearance even while competing in business and their professions. They must have a career and yet be romantic, tender, and sweet, and in marriage play the part of the ideal wife, cum mistress, cum mother who puts away her hard earned diplomas to wash nappies and perform other menial chores. It is quite obvious that the conflict between so many irr-econcilable demands on her time, in a world where the male spirit of competition reigns supreme, exposes the woman to a terrible social ordeal. (p.35)

The adolescent development of the female also influences self-esteem thus affecting the chances of having an eating disorder. The societal ideal of femininity is the early pubertal look stressing the lithe form with low body fat (Faust, 1983). In a 1988 research study involving 1,010 London female high school students, Patton found that poor identity formation was associated with developing eating disturbances. Supplemental research has shown that there is a significant correlation between self-esteem and satisfaction with body characteristics, this relationship being stronger in females then in males (Gray, 1977; Lerner & Karabenick, 1974). Compounding this in western societies adolescent girls experience more anxiety, insecurity, and self-conciousness then adolescent boys (O'Mally & Bachman, 1979; Savin-Williams, 1979; Tobin-Richards, Boxer, & Peterson, 1983). Tobin-Richards et al.

also added that the effects of early maturation of girls is often confusing and ambiguous, with the adolescent female becoming more insecure trying to relate to societal standards. Steiner-Adair's (1986) research on a female high school population indicated that the girls most drawn to the have-it-all personality established by society scored highest on the Eating Attitudes Test, a test that measures the behavior characteristics of subjects with Anorexia and Bulimia Nervosa. This adolescent research relates directly to Roden, Silberstein, and Steigal-Moore (1985) having documented the importance of being thin to middle and upper class women who are still trying to relate to these standards. Bennet and Gurin (1985) reported on a 1980 survey of female New York college students in which 69% saw themselves as overweight while in fact only 29% actually weighed more then "normal" weight. Gordon (1989) stipulated that most Bulimic women in today's society suffer from an acute version of identity conflict where they are unable to find an adaptable solution to the conflicting demands placed on them. All of these pre-existing societal conditions play a large part in "setting up" the woman for Bulimia Nervosa's binge/ purging cycles and fits in perfectly as a condition in the first psychological stage of the disease.

Psychological Stages of Bulimia Nervosa

According to Polivy et al., (1993) there are five psychological stages to Bulimia Nervosa. These are as follows: stage 1) the pre-binge phase, and stage 2) the triggering of the binge. Long term conditioners and immediate triggers of binges are both frequently cited as antecedents of Bulimia (Orleans et al., 1984; Schuldt & Johnson, 1990). Stage 3 of the disease entails the psychological factors maintaining the binge while stage 4 is the terminating of the binge/ purge cycle. The binge/ purge cycle can be stopped by means other than the removal of the original cause of the first binge (Fairburn & Garner, 1986). The fifth stage is the post cycle phase in which the

consequences, real or imagined, can become preconditions for the next Bulimic episode.

Stage 1: This stage is the pre binge/ purge stage and all of the existing preconditions that would influence the subject to start on the cycle. These conditions are predominantly of social or intrinsic value. As stated, society's emphasis on female slimness has coincided with a dramatic increase in the incidence of the Bulimic disorder. The derogatation of fatness and the idealization of thinness have also been accompanied by a high degree of body image dissatisfaction in females, especially adolescents and young women (Polivy et al., 1993; Cash & Brown, 1987; Garner, Garfinkel, & Bonato, 1986; Hawkins & Clement, 1980; Polivy, Herman, & Pliner, 1990). Bulimic patients have been shown to be particularly dissatisfied with their bodies (Fairburn & Garner, 1986). Intrinsic psychological factors compounding societal pressures, in the pre binge phase, include 1) the desire/ need to exercise excessively (DSM-IV sec. B pathologic behavior); 2) the desire to be thin expressed through restricted caloric input; 3) low self esteem; 4) a personality that is more anxious, dysphoric and emotionally unstable (Edwards & Nagelberg, 1986); and 5) an irrational dichotomous thinking style. On the first factor, Yates, Leehey, and Shisslak (1983) were able to establish a link between excessive exercise and binge eating. Exercise, like any scale behavior, can become ritualized and quite debilitating (Garner & Garfinkel, 1985). Exercise can also be used for a variety of purposes to the Bulimic patient, including a form of self punishment or "a goal orientated pursuit of achievement serving narcissistic/ exhibitionist concerns, or as a general mechanism for regulating such tension as anxiety and anger" (Garner et al., 1984, p.24). The second psychological tendency of Bulimic patients is the drive for thinness through dieting. Klesges, Klem, and Bene (1989) found that chronic dieters eat less than

normal dieters. The chronic dieting leaves feelings of depression or dieters deprivation which has been identified as a contributor to overeating and binging (Hawkins et al., 1980; Orleans et al., 1984; Rosen, Tacy, & Howell, 1990). The pursuit of thinness is also a vehicle for achievement for women, for in an era of increased emphasis of success, there have been relatively few social areas for women to directly compete. The pursuit of thinness has become a socially sanctioned way to compete and "demonstrate intrapsychic and interpersonal achievement" (Johnson, Tobin, & Steinberg 1989, p.65). Through this achievement orientated action, dieting becomes a never ending pursuit. Johnson et al. also suggested that women who actively pursue thinness and struggle to maintain a weight below their set genetic weight often become biologically and psychologically deprived. Deprivation, as it turns out, is another precondition to the binge cycle. Low self-esteem levels are the next pre binge characteristic (Herman & Polivy, 1988). Polivy et al., (1993) stated "It may well be that having a low opinion of oneself makes individuals vulnerable to the pressure to be thin and thus more likely to diet." (p. 176). This explains the negative correlation between self-esteem and chronic dieting and between self-esteem and body dissatisfaction. The personality type that is most prone to the disease is usually depressed and dysphoric (Ruderman & Grace, 1988). Hsu (1990) supplemented this research by finding that the most common dysphoric moods that can trigger a binge are tension and anxiety. Other personality traits that can affect the onset of the disorder include being obsessional, socially introverted, perfectionist, over controlled, and socially dependent (Garner & Garfinkel, 1982; Garner, Olmstead, & Polivy, 1983; Strober, 1980). All of these preconditions can also serve as reinforcers to Bulimia when the disease is at its acute phase adding to its cyclical nature. All of these traits, events, and pressures set the stage for the onset of the

Bulimic patients' binge/ purge episode. The next step in the process is the trigger effect.

Stage 2: Once preconditions for the Bulimic binge/ purge syndrome have been recognized, stage two occurs, the triggering of the episode. A Bulimic episode/ binge eating trigger may be thought of as an acute event that transforms the latent inclination to eat into an overt binge (Polivy et al., 1993). The most frequently cited instigator of a binge/ purge episode is a negative stressor (Abraham & Beumont, 1982). In multiple studies, (Heatherton, Herman, & Polivy, 1991; Herman & Polivy, 1991; Ruderman; 1985) experimentally induced dysphoria caused restrained eaters and dieters to eat more than similarly distressed non-dieters. "Distressed dieter's overeating seems to be connected specifically to threats to self image." (Polivy et al., 1993, p.180). Distress is able to start a Bulimic attack because it has a negative affect and causes the subject to try to focus in the immediate, in which cognitive thinking is directed from the abstract level to the present stimuli (Heatherton & Baumeister, 1991). With the focus level reaching the immediate attention stage, long term goals are forgotten and the Bulimic patient becomes more responsive to food cues. Herman et al. (1991) advanced that since dieters are less in touch with their internal cues, they do not react as well to psychological distress induced hunger suppression signals as non-dieters do. An investigation done by Davis, Freeman, and Garner (1988) hypothesized that negative stress reduces the psychological importance of dietary self-control and the body responds by binging. The reaction of binging as a consequence to a negative stressor might have physiological backgrounds. Studies done on non-dieting animals have backed this theory. Rowan and Antelman (1976), in a study on rats, found evidence that rats overeat when exposed to a negative stressor. This study's results adds another perspective to the

negative stress theory, that binge/ purging, besides being caused by a stress, might be triggered to relieve the stress. Binge eating, in fact, has been shown to reduce anxiety in Bulimia Nervosa patients (Elmore & DeCastro, 1990). Other triggers of the Bulimic episode include the presence of fattening food cues, hunger/ food cravings, the presence of forbidden foods, and self conception irregularities. Internal/ external food cues have been found to promote binge eating episodes even in the absence of distress (Abraham et al., 1983). The eating of forbidden food seems to strain the internal all or none dichotomous thinking style on food. To the Bulimic patient's train of thought, this eating justifies the binge since there already has been a breakdown with the forbidden food, gorging is allowable. This starve or binge mentality has been discussed in terms of an abstinence violation effect by Schlundt and Johnson (1990). In these instances the Bulimic patient's irrational thought patterns start a binge when they think they have ruined all dieting plans by the ingestion of even the smallest amount of forbidden food. Dichotomous thinking about food also affects the last trigger of Bulimia, self conception irregularities. Hsu (1990) theorized that these irregularities, distorted attitudes about weight, eating, and fatness, breed the "morbid fear of fatness" that is the cardinal feature of eating disorders (p. 12). This fear of fatness is an incredibly strong stage 3 factor as well as a trigger mechanism for the binge/ purge syndrome of Bulimia.

Stage 3: The psychological factors needed to maintain the Bulimic cycle of binging and purging make up this third stage. The usual maintaining factors noted are negative stress reduction, privacy for the binge/purge, the opportunity to purge, and the fear of being fat. Distress is a trigger mechanism for the disease so it stands to reason as long as the Bulimic episode is reducing the negative stress the episode will continue (Fairburn & Cooper, 1987). In this instance the negative reinforcer is the fact

that the binge/ purge makes the Bulimic patient feel better in the face of some distress. The second major psychological maintainer is the morbid fear of being fat. Hsu (1990) reported that continued weight loss is considered a triumph and the idea of staying the same weight from day to day or gaining weight is enough to promote a panic among Bulimic patients. The Bulimic patient purges to lose, or not to gain, weight until the body physically rebels to the starvation. This psychobiological urge precipitates the next binge thus reinforcing the cycle. The next concept , the privacy issue, is the major external maintainer to the process. In laboratory studies Herman, Polivy, and Heatherton (1979) found that subjects that feel self conscious in the presence of another person are less likely to binge than when they are alone. Abraham et al., (1982), Orleans et al., (1984), and Wilson (1984) took this concept one step further and postulated that a Bulimic patient will only binge while alone. Privacy defends the Bulimic patient from societal stigmas that would go along with the binge if recognized. Abraham et al. (1984) has shown that if another person intrudes upon the Bulimic patient during the binge episode, the episode will be stopped or at least postponed until the intruder leaves. This need for privacy plays an even larger part during purging episodes. With purging the stakes go from social stigmas to social ostracization. Since Bulimia Nervosa is a weight control disease there will be a decreased amount of binges if the opportunity to purge is decreased. Without the the privacy and the opportunity to binge the Bulimic cycle will be broken. The purge also ties in as a stress reduction mechanism for the Bulimic patient (Rosen & Leitenberg, 1985). Vomiting has been found to relieve negative feelings of anger, inadequacy, and lack of control (Leitenberg, Gross, Peterson, & Rosen, 1984). Even though vomiting is a negative stress reliever Leitenberg, Rosen, Gross, Nudelman, and Voro (1988) found that Bulimic patients will not binge if they know they will be

prevented from purging later. Subjects with Bulimia Nervosa fear society's view of their body image, but they fear getting caught more.

Stage 4: The psychological termination of the binge/ purge cycle results when the major influencing factors of the Bulimic cycle are removed. These factors do not have to be the original causal factors. All of the factors can be removed by internal or external cues. Two of the stronger psychological cues are fullness and pain (Abraham et al., 1982), Abraham also stated that the Bulimic cycle could run out of steam, in many cases the psyche of the patient coming to terms with the physiological impact that the Bulimic episode had on the body. Even physical cues for stopping the Bulimic episode have psychological aspects, emotional or cognitive thinking or both being developed from a biological need. In any event the Bulimic patient stops the cycle, or the cycle is stopped, and then has to accept the consequences of his/ her actions.

Stage 5: Consequences of the Bulimic episode are two fold, short term and long term results. Short term reactions often are, in the Bulimic patient's mind, gratifying and positive reinforcers. Rosen and Leitenberg (1982) thought "the Bulimic woman is able to avoid unpleasant thoughts about getting fat" (p.175). In the short term the purge reduces the anxiety of the binge. Long term effects, on the other hand, are negative and often contribute to the onset of the next binge, developing feelings of shame, guilt, and depression (Orleans et al., 1984). Bulimic patients then tend to feel out of control with their weight problems causing them to return to spartan dieting plans, increasing chances for a later binge. Schuldt et al. (1990) found that these negative consequences soon gave way to an increased distorted body image and added negative self evaluation.

The five psychological steps in Bulimia Nervosa show how the disease builds upon itself to control the person. Even more importantly, these steps become cyclical,

and each cycle becomes stronger with the reinforcers of the previous cycle. In normal everyday situations the disease is hard enough to identify and control. When it is added to the competitive field of intercollegiate female athletics, Bulimia Nervosa can become even more dangerous.

Bulimia Nervosa and Women's Athletics

Women athletes may have a greater chance of contracting Bulimia Nervosa than the general female college population. The environment of sports, with its goal orientated ideals, place the female athlete at higher risk than her general population counterpart. The need to win, society's views on female athletes, and coaching pressures all have great effect on the athlete. Unfortunately there are members of the sports world who have strongly emphasized the relationship between low body fat composition and enhanced athletic performance (Thompson & Sherman, 1993). The combination of these factors usually leads the athlete to diet in some fashion, a precursor of Bulimia Nervosa. Sundgot-Borgen (1994) found that the athletes' chances of contracting Bulimia increased as the sport requirement for leanness increased. She also found that eating disordered athletes usually began sport specific training and dieting earlier than not at risk athletes. Garner and Garfinkel (1982) suggested that the activities that emphasize small body size, thin shape, or low weight tend to increase the likelihood of eating disorders in participating athletes. Sport legitimizes thinness which provides an attractive end to individuals at risk of Bulimia Nervosa, or for that matter, any eating disorder. Smith (1980) agreed that

> the dominant role of athletic activities in our society and the extent and intensity of sports participation by large numbers of young people create stress causing a whole new constellation

> of health problems, both emotional and physical. One such problem is excessive weight loss and food aversion (p140).

Williamson, Netemeyer, Jackman, Anderson, Funsch, and Rabalais (1995) did a correlational study where they found that sociocultural pressures for thinness, athletic performance anxiety, and negative self appraisal of athletic performance all influence eating disorders. All of the previous research has shown a definite relationship between athletics and Bulimia, but the nature of the relationship is still uncertain. Thompson et al., (1993) has put forth three possible themes on the relationship between sports and Bulimia Nervosa.

1. Aspects of sport or of specific sports attract individuals who either are eating disordered or at risk for the development of an eating disorder.

2. Participation in sports or in a specific sport causes eating disorders.

3. Sport or participation in some sports does not cause the disease, but precipitates its development in athletes who are predisposed to have an eating disorder. (p. 25)

THEME 1. Aspects of a sport attract individuals who have or are at risk of getting Bulimia Nervosa.

Women's athletics, especially events like ballet and gymnastics, have legitimized extreme thinness in sports. Many women who need justification, self and societal, have joined these sports for that reason. Sacks (1990) offered that many individuals with the eating disorder are attracted to sports like distance running and gymnastics to hide their illness. An example of this legitimizing of thinness is that one would be hard pressed to find an intercollegiate female gymnastics coach who told his/ her charges that they were too thin. While these types of sports attract athletes who already have

the disease they also attract college women who are at risk for the disease. One of the pathogenic weight control mechanisms put forth in this paper is excessive exercise to lose weight and intercollegiate sports definitely offer that opportunity. Outside the sports world a college woman might be criticized for over exercising, but inside the sports arena that same woman would probably be applauded and rewarded for trying to reach her peak potential (Thompson et al., 1993).

THEME 2. Participation in athletics causes Bulimia Nervosa in the female athlete.

The causational theme of Bulimia Nervosa on Women's intercollegiate athletics can be justified on two fronts. 1) that the excessive exercising the sport demands causes Bulimia Nervosa, or 2) that the demand for success in the sport is what causes the disease. Epling and Pierce (1984) stated the female's exercising and dieting activate Bulimia's vicious cycle. "Strenuous exercise tends to suppress appetite which served to decrease the reinforcement value of food, food intake decreases and body weight is lost" (Thompson et al., 1993, p.27). As the body loses its weight the subject starts to see the exercising as a positive reinforcer and increases its amount and intensity. Enter the vicious cycle of Bulimia Nervosa. The second front of athletics causing Bulimia is that of the need to succeed. Intercollegiate athletics at the division 1-A level are, for all sake and purpose, professional. The level of success the female athlete attains relates directly to the amount of money she gets for scholarship. If you are the best at what you do, you're going to get a full ride. If you start to slip, so does your scholarship. In events where success is attributed to leanness, female athletes will use any means necessary to attain that leanness that success demands. A good example of this is a quote from Patricia Sabo, a former freestyle swimmer from the

NCAA champion team of the University of Texas, remembering her own " get thin and win" strategy. " I would agree to a goal weight .... , and I felt that I needed to make that weight in order to perform my best. Weight control is a factor that cannot be overlooked by athlete or coach" (Thornton, 1990, p.116). This mentality was shared by the rest of the swim team. According to the Austin American-Statesman, 12 of the Texas team members were diagnosed with an eating disorder in an 18 month time span (Thornton, 1990). Other studies have added credibilility to the leanness equals success problem. Rosen and Hough (1988) completed a study where it was found that among interviewed college female gymnasts, 67% of them said their coaches told them they were overweight (Thompson et al., 1993 p.27). Coaching mentalities, the sport itself, and the success the sport demands at the intercollegiate level then can cause Bulimia Nervosa and associated eating disorders. Athletes, athletic trainers, and coaches need a tool that will allow them to check on the athletes' condition for the athletes' own safety.

THEME 3. Participation in sports does not cause BulimiaNervosa, it just precipitates the development.

This third theme highlights the fact that not all female athletes in fact have an eating disorder. Even with all the pressures, some female athletes hold to a healthy lifestyle. Athletics might precipitate an eating disorder such as Bulimia Nervosa only in athletes who are predisposed to the disease. While a "healthy" individual might be able to see through the disease, or in some instances quit the binge/purge cycle, the predisposed Bulimic patient falls into the disease's grasp. Thompson et al. (1993) gave the example of a coach requiring extremely low weight levels for his/ her female athletes. This is apt to make many of the athletes diet and it may precipitate the

disease in some of the athletes. It shouldn't do this in all the athletes however, just the ones who are predisposed. If the athlete is predisposed to Bulimia Nervosa then the coaches actions can act as a trigger effect. Thompson also highlighted two of the predisposing factors, self regulatory deficits and high achievement expectations. These factors, when properly checked, can highlight athletes who are at risk of Bulimia Nervosa and should be monitored for that effect.

Regardless of the theme behind the relationship of Women's intercollegiate athletics and Bulimia Nervosa, one must understand there is a relationship. Athletes, trainers, and coaches all must work together to try to prevent the onset and spread of this disease. Using the EDI to monitor incoming freshmen female athletes will give the proper medical staff a chance to educate the athlete and help prepare her to control her own nutritional eating habits safety and not let Bulimia take effect.

Chapter 3

Methods

Subjects: Subject volunteers were members of The University of Montana's Women's collegiate sports program. This program includes the soccer, volleyball, tennis, basketball, and track/ cross country teams. A group of two diagnosed Bulimic female athletes made up the test validation group. A sample of female freshman athletes in UM's athletic programs were given the test.

Administration

The EDI can be administered in individual and group settings and has been used with respondents as young a 11 years of age. The following instructions and testing conditions are recommended.

1. The EDI should be introduced as a measure of the respondents attitudes, feelings, and behaviors related to eating and other areas in general

2. Respondents should be informed that there are no right or wrong answers, and there is no time limit for completion.
3. Reassurance may be provided by indication that the EDI is a standardized instrument that has been completed by thousands of people.
4. The EDI should be administered in a private setting.
5. The EDI is not intended to tap idiosyncratic item interpretation so respondents should be given the opportunity to ask questions and the tester should provide any necessary clarifications.
6. Respondents should be informed that it is important to answer all questions.

(Garner, 1991. pi.)

Instrument: The Eating Disorder Inventory (EDI) was used to measure the risk of Bulimia in the freshman group as compared to the national tabulated scores of the validated test. The EDI is a 64 question, multiple-answer, self-reporting instrument whose function is to assess a spectrum of psychological and behavioral traits common

in people with Bulimia Nervosa (Appendix 2B). The inventory is divided into eight sub scales, four psychological, and four behavioral. The four psychological scales are 1) Perfectionism, 2) Intrapersonal Distrust, 3) Interoceptive Awareness, and 4) Maturity Fears. Perfectionism is the extent to which one believes that personal achievements should be superior. In 1978, Bruch suggested that " the struggle to live up to perfectionist achievement standards is characteristic of those who develop eating disorders" (Garner, 1991, p. 6). The Interpersonal Distrust category assesses an individual's need to keep others at a distance, which has been documented to be an important psychological theme in the development of some eating disorders (Johnson & Conners, 1987). Interoceptive Awareness measures confusion and apprehension in recognizing and accurately responding to emotional states (Garner, 1991). Mistrust and confusion related to affective functions is important in the maintenance of Bulimia Nervosa. Finally, the Maturity Fears sub scale measures the want to retreat to childhood. Crisp (1980) discussed that the "central psychopathology" of Bulimia Nervosa is related to fears of the biological and psychological experiences related to weight gain (Garner, 1991, p. 6). The four behavioral scales are 1) Drive for Thinness, 2) Bulimia, 3) Body Dissatisfaction, and 4) Ineffectiveness (Inadequacy). Drive for Thinness is the cardinal feature of all eating disorders and this sub scale measures one's fear of fatness. The Bulimia sub scale assesses the tendencies to think about and engage in bouts of uncontrollable binging. The presence of binging is one of the defining features of Bulimia Nervosa (Garner, 1991). The reader should understand that this sub scale just measures attitudes toward binging. It does **not** assess the prevalence of Bulimia Nervosa. Body Dissatisfaction is concerned with the subject's negative feelings to the size and shape of his/her body that are "fear" areas to eating disorder patients (i.e. stomach, hips,

buttocks, and thighs). Body Dissatisfaction is viewed as a major factor in the starting and maintaining the weight control behaviors that are associated with eating disorders (Garner, 1991). The Ineffectiveness sub scale assesses feelings of general inadequacy. Garner and Bemis (1985) and Wagner, Halmi, and Maguire (1987) have included feelings of general inadequacy in their clinical formulations of the development of eating disorders (Garner, 1991, p. 5).

The reliability and validity of the EDI have met the requirements for test development. The EDI was developed with questions that met three criteria. First, the questions had to demonstrate validity by significantly differentiating between The Anorexia Nervosa group and the non patient group. Second, the items had to be more highly correlated with their intended sub scale than with any other sub scale. Third, the items had to form a sub scale that had a coefficient of internal consistency above .80 for the Anorexia Nervosa samples (Garner, 1991). Garner also set item-total scale correlation coefficients above .40 to be desirable. Three items on the test had a lower coefficient, but were retained because of conceptual importance (p25). All further validity tests can be seen in the Appendices 2A-2D. Appendix 2A demonstrates item-total scale correlations for the eating disorder group (N=889), Anorexia Nervosa group (N=155), and non patient female group (N=271). Appendix 2B, 2C, and 2D demonstrate the construct validity through convergent and discriminant validity. Appendix 2B uses correlations between the EDI and two other scales of eating, the EAT-26 test published by Garner, Olmstead, Bohr and Garfinkel (1982) and the Restraint Scale published by Herman and Polivy (1975). All p- values for the three appendices were based on Myers' (1979) publication.

Procedure: The EDI was given to the two volunteer diagnosed Bulimic athletes. Once their scores had been tabulated for validity measurement testing for the U of M

population the EDI was given to the volunteer female freshman athletes. The tests were given, and received, as a group in a closed setting with confidentiality being stressed. No names were taken or sports differentiated between and the athletes were told that at any time they can withdrawal from the test When the EDI was given I handed out the inventory, explain the directions, and sat in the corner of the room. The testing time period was 20 minutes and when each athlete was finished with the inventory she placed it in a manilla envelope and left the room. At the end of the twenty minutes I retrieved the envelope with the finished tests and tabulated the results. Results from the freshman test group were then compared to the baseline Bulimic sub scale numbers from the EDI national standardized scores.

Scoring

The most concise method of evaiuating scores on the EDI is to plot the sub scale scores on the profile form (see Appendix) allowing direct comparison with sub scale scores for the eating disorder and non patient college female comparison groups. The shaded areas on the profile form represent +/- one standard deviation of measurement (SD) equal to a 68% confidence interval for these groups (Garner, 1991). When the scores for an individual are being measured, a more precise measurement can be obtained by graphing each sub scale score as well as the confidence interval for that score. Data inthe following table provides the information needed for comparisons between the test group, the nationaly recorded eating disorder group, and the nationaly recorded nonpatient group. The table numbers are based on two previous studies with the population for the eating disorder category being 889 and the population for the non patient group being 271 (Garner, 1991).

Means, Standard Deviations, Standard Errors of Measurement (SE_m), and 95% Confidence Intervals for Combined Eating Disorder (ED) and Female Nonpatient Comparison (FC1) Groups

	M		SD		SE_m		95% Confidence Int.	
EDI Sub scale	ED	FC1	ED	FC1	ED	FC1	ED	FC1
Drive Thinness	14.5	5.5	5.6	5.5	2.3	2.2	10.0-19.0	1.2-9.8
Bulimia	10.5	1.2	5.5	1.9	2.1	0.9	6.4-14.6	0.0-3.0
Bdy Diss.	16.6	12.2	8.3	8.3	2.3	3.0	12.1-21.1	6.3-18.1
Ineffectiveness	11.3	2.3	7.8	3.6	2.5	1.6	6.4-16.2	0.0-5.4
Perfectionism	8.9	6.2	4.9	3.9	2.2	2.5	4.6-13.2	1.3-11.1
Int.pt. dst.	5.8	2.0	4.7	3.1	1.9	1.3	2.1-9.5	0.0-4.5
Intrcpt Awrns	11.0	3.0	6.9	3.9	2.8	2.1	5.5-16.5	0.0-7.1
Maturity Fears	4.5	2.7	4.7	2.9	1.9	1.3	0.8-8.2	0.2-5.2

(Garner, 1991, p. 20).

Chapter 4

Results

At the completion of the testing process thirteen of the sixteen freshman, female athletes had volunteered for the EDI and had completed it. The remaining three athletes had concerns about the test and did not volunteer for the study. The region validation group, two diagnosed Bulimic female athletes, also volunteered for the EDI and completed the questionnaire (for complete Group 1 and 2 individual scores see Appendix 3A). Mean results from group1 on sub scales 1-8 are as follows, Drive for Thinness (DT) 17, Bulimia (B) 17.5, Body Dissatisfaction (BD) 21.5, Ineffectiveness (I) 10, Perfection (P) 12, Interpersonal Distrust (ID) 3.5, Interoceptive Awareness (IA) 11, and Maturity Fears (MF) 2.5. The standardized scores used in this study for the eating disorder group were determined by Garner (1991) and are listed followed by their standard deviations. DT 14.5 +/- 5.6, B 10.5 +/- 5.5, BD 16.6 +/- 8.3, I 11.3 +/- 7.8, P 8.9 +/- 4.9, ID 5.8 +/- 4.7, IA 11+/- 6.9, and MF 4.5 +/- 4.7. The raw mean scores of Group 1 were tabulated into percentile ranks for eating disorder patients (See page 47.) Group 1 translated scores are in the 61st percentile, for DT, 90 percentile for B, 65% for BD, 50% for I, 74% for P, 42% for ID, 58% for IA, and the 59th percentile for MF. All of group 1's raw sub scale scores are either within one Standard Deviation (SD) of the national standardized score or are positively higher than the standardized score. The converted scores also match up high In the percentile ranks of eating disorder patients. The EDI's effectiveness is used on Group 2 to check for "at risk" behavior.

When reading these results one should realize that all of the sub scales are equally and separately important. If the athlete scores above the standard score for eating disorder patients on any of the sub scales the athlete should be considered "at risk" for a predisposing factor of Bulimia Nervosa and should be referred as such. Group 2's results were high for prevalence of at-risk behaviors that can lead to Bulimia Nervosa. Thirty-eight percent of Group 2 individuals tested within the DT sub scales' 1st SD, thirty-eight percent of the groups' individual scores also tested into the 1st SD of the BD sub scale. Twenty-three percent of the groups scores fell into the 1st SD of I sub scale and an incredible 62% fit into the P sub scale Standard Deviation. Thirty-eight percent and 15 percent of Group 2 fell into the 1st SD of sub scales ID and IA respectively. The last sub scale Maturation Fears had ninety-two percent of Group 2's population incorporated into its 1st Standard Deviation.

Chapter 5

Discussion

Using the Eating Disorder Inventory (EDI) this study investigated the propensity of Bulimia Nervosa and the diseases' predisposing factors through use of eight sub scales. In addition, the study sought to show the EDI was applicable to The University of Montana female student-athlete population by comparing the EDI's standardized sub scale scores to a group of diagnosed Bulimics from that population. The study would use the EDI to highlight "at risk" athletes from the target population. This would allow them to be refered to the proper nutritionists and clinical psychologists for further counseling.

Individually the EDI test seems an effective tool to highlight "at-risk" athletes. The test is nationally construct validated and, through Group 1 testing, shows to be applicable for The University of Montana region and female student-athlete population. The mean scores of the group and the individual's sub scale scores both show that the EDI can highlight known Bulimics at The University of Montana. Evidence demonsrtates that the EDI works with the population at the institution and in the region. When testing Group 2 it was found that individual results show a high percent of these female student athletes are "at risk" of one or more predisposing factors (sub scales) for Bulimia Nervosa. This warrants that furtherstudies be done with larger populations of the athletes. If further studies highlight the same information then it is suggested that these athletes be counseled and educated by proper specialists in the fields of psychology and nutrition. I then suggested that the EDI be placed on the Athletic Training Health History form for all incoming freshman female athletes. The information provided by this test could be a functional first step in the diagnostic assessment of the athlete for being in danger of acquiring or maintaining an

eating disorder. The psychological, physiological, and biological benefits of this "early warning system" would be most beneficial to the athlete and the medical staff that works with her. Identification of risk factors may lead to an earlier and more appropriate intervention. Early examination is most important to the silent majority of the population who suffer from Bulimic symptoms, but do not seek treatment until the disease has reached a chronic stage and has become physically debilitating.

Conclusions

The Eating Disorder Manual was found to be effective in highlighting the degree to which the female student athlete was at risk of predisposing factors to Bulimia Nervosa. First in Group one, two diagnosed Bulimic female athletes, then in Group 2 which was the freshman class group. While there are limitations to the study, including possible dishonesty when answering the test and the small number of the testing population, the data did show a high number of athletes were individually "at risk" of predisposing factors of Bulimia Nervosa. The test can be an effective unit of measure in the diagnostic process of the eating disorder relating to freshman female student athletes.

REFERENCES

Abraham, S. F., & Beumont, P. J. V. (1982). How patients describe bulimia or binge eating. Psychological Medicine. 12, 625-635.

American Psychiatric Association. (1993). Diagnostic and statistical manual of mental disorders. (4th ed., rev.) Washington DC.

Berscheid, E., Walster, E., & Hohrnstedt, G. (1973). The Happy American Body: A Survey Report. Psychology Today. 11, 119-131.

Bennett, W. & Gurin, J. (1985). The dieters dilema. (Whitaker Ed.) *The Bulimic College Student: Evaluation, Treatment and Prevention (1989)* New York: Hawthorn Press.

Borben, J. & Corbin, C. (1987). Eating disorders among female athletes. The Physician and Sportsmedicine. 15, No.2, 89-95.

Boskind-Lodahl, M. (1976). Cinderella's step-sister: A feminist perspective on anorexia nervosa and bulimia. Signs: Journal of Women in Culture and Society. 2, 342-356.

Brooks-Gunn, J., Warren, M. and Hamilton, L. (1987). The relationship of eating disorder to amenorrhea in ballet dancers. Medical Science and Sports Exercise. 19, 41-44.

Bruch, H. (1978). The Goldon Cage. Cambrige: Harvard University Press.

Burkes-Miller, M. & Black D. (1988). Male and female college athletes: prevalence of anorexia nervosa and bulimia nervosa. Athletic Training. 2, 137-140.

Cash, T. & Brown, T. (1987). Body images on anorexia nervosa and bulimia: A review of the literature. Behavior Modification. 11, 487-521.

Crisp, A. (1980). Anorevia Nervosa. New York: Grune & Stratton.

Davis, R., Freeman, R., & Garner, D. (1988). A naturalistic investigation of eating behavior in bulimia nervosa. Journal of Consulting and Clinical Psychology. 56, 273-279.

Dick, R. (1991). Eating disorders in NCAA athletic programs. Athletic Training. 26, 136-140.

Edwards, F., & Nagelberg, D. (1986). Personality characteristics of restrained binge eaters versus unrestrained non binge eaters. Addictive Behaviors. 11, 207-211.

Elmore, D., & De Castro, J. (1990). Self related moods and hunger in relation to spontaneous eating behav. in bulimics, recovered bulimics, and normals. International Journal of Eating Disorders. 9, 179-190.

Fairburn, C. G., & Cooper, Z. (1987). Behavioral and cognitive approaches to the treatment of anorexia nervosa and bulimia nervosa. (Beaumont, Burrows, & Casper Eds.) Handbook of Eating Disorder. Amsterdam: Elsevier. 271-298.

Fairburn, C., & Garner, D. M. (1986). The diagnosis of bulimia nervosa. International Journal of Eating Disorders. 5, 403-419.

Faust, M. S. (1983). Alternative constructions of adolescent growth. (Brooks-Gunn & Peterson eds.), Girls at Puberty. New York: Plenium Press 105-125. (1985).

Garner, D. M. (1991). Eating Disorder Inventory-2 Manual. Odessa, Fl: Psychological Assessment Resources, Inc.

Garner, D. M., & Bemis, K. M. (1982). A Cognitive-behavioral approach to anorexia nervosa. Cognitive Therapy and Research. 6, 123-150.

Garner, D. M., & Garfinkel, D. (1982). Anorexia nervosa: A multi dimensional perspective. New York: Brunner/ Mazel.

Garner, D. M., & Garfinkel, P. E. (1985). Introduction. (Garner & Garfinkel eds.). Handbook for Psychotherapy for Anorexia Nervosa and Bulimia. New York: Guilford Press. 24.

Garner, D. M., Garfinkel, P. E., & Bonato, D. P. (1987). Body image measurement in eating disorders. Advances in Psychosomatic Medicine. 17, 119-133.

Garner, D. M., Garfinkel, P. E., Stancer, H., & Moldofsky, H. (1976). Body image disturbances in anorexia nervosa and obesity. Psychosomatic Medicine. 38, 327-336.

Garner, D. M., Olmstead, M. P., Bohr, Y., & Garfinkel, P. (1982). The Eating Attitudes Test: Psychometric features and clinical correlates. Psychological Medicine. 12, 871-878.

Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). Eating Disorder Inventory Manual. Odessa, Fl: Psychological Assessment Resources, Inc.

Gordon, R. A. (1989). Bulimia: A sociological interpretation. (Whitaker & Davis eds.). Handbook of Psychotherapy for Anorexia and Bulimia. New York: Guilford Press 55-82.

Gray, S. H. (1977). Social aspects of body image: Perception of normalcy of weight and affect of college undergraduates. Perceptual and Motor Skills. 45, 1035-1040.

Hawkins, R. C., & Clement, P. F. (1980). Development and construct validation of a self report measure of binge eating tendencies. Addictive Behaviors. 5, 219-226.

Hawkins, R. C., & Clement, P. F. (1984). Binge eating: Measurement problems and a conceptual model. (Hawkins, Clement, & Fremouw eds.). The Binge-Purge Syndrome. New York: Springer. 229-251.

Heatherton, T. F., & Baumeister, R. F. (1991). Binge- eating as escape from self awareness. Psychological Bullitin. 110, 86-108.

Heatherton, T. F., Herman, C. P., & Polivy, J. (1991). Restraint, weight loss, and variability of body weight. Journal of Abnormal Psychology. 100, 73-83.

Herman, C. P., & Polivy, J. (1988) Excess and restraint in bulimia. (Pirke, Vandereycken, & Ploog eds.). The Psychobiology of Bulimia. Munich: Springer-Verlag. 33-41.

Herman, C. P., & Polivy, J. (1975). Anxiety, restraint and eating behavior. Journal of Personality. 84, 666-672.

Herman, C. P., Polivy, J., & Silver, R. (1979) Effects of an observer on eating behavior: The induction of sensible eating. Journal of Personality. 47, 85-99.

Hsu, L. K. (1990) Eating Disorders. New York: Guilford Press. 12.

Johnson, C. L., & Connors, M. E. (1987). The etiology and treatment of bulimia nervosa: A biopsychosocial perspective. New York: Basic Books.

Johnson, C., Tobin, D., Steinberg, S. (1989). Etiological, Developmental and Treatment considerations for Bulimia. (Whitaker, & Davis eds.) The Bulimic College Student. New York: Hawthorne Press. 65.

Klesges, R. C., Klem, M. L., & Bene, C. R. (1989). Effects of dietary restraint,

obesity, and gender on holiday eating behavior and weight gain. Journal of Abnormal Psychology. 98, 499-503.

Leitenberg, H., Gross, J., Peterson, J., & Rosen, J. C. (1984). Analysis of an anxiety model and the process of change during exposure plus response prevention treatment of bulimia nervosa. Behavior Therapy. 15, 3-20.

Leitenberg, H., Rosen, J. C., Gross, J., Nudelman, S., & Vara, L. (1988). Exposure plus response-prevention treatment of bulimia nervosa. Journal of Consulting and Clinical Psychology. 56, 535-541.

Lerner, R. M., & Karabenick, S. A. (1974). Physical attractiveness, body attitudes, and self-concept in late adolescents. Journal of Youth and Adolescents. 3, 307-316.

Myers, J. L. (1979). Fundamentals of experimental design. Boston: Allyn and Bacon.

O'Mally, P. M., & Bachman, J. G. (1979). Self-esteem and education: Sex and cohort comparisons among high school seniors. Journal of Personality and Social Psychology. 37, 1153-1159.

Orbach, S. (1985). Accepting the symptom. A feminist psychoanalytic treatment of anorexia nervosa. (Garner & Garfinkel eds.). Handbook of Psychotherapy for Anorexia Nervosa and Bulimia. New York: Guilford Press. 83-106.

Orleans, C. T., & Barnett, L. R. (1984) Bulimarexia: Guidelines for behavioral assessment and treatment. (Hawkins, Fremouw, & Clement eds.). The Binge Purge Syndrome. New York: Springer. 149.

Palazzoli, M. S. (1978). Self-Starvation: From the Intrapsychic to the Transpersonal Approach. New York: Aronson. 35.

Pasman, L. T., & Thompson, J. K. (1988). Body image in obligatory runners, obligatory weight lifters, and sedentary individuals. International Journal of Eating Disorders. 7, 759-769.

Patton, C. G. (1988) The spectrum of eating disorder in adolescence. Journal of Psychosomatic Research. 32, 579-584.

Polivy, J., & Herman, C. P. (1993). Etiology of binge eating: Psychological mechanisms. (Fairburn & Wilson eds.) Binge Eating: Nature Assessment and Treatment. New York: Guilford Press. 173-205.

Polivy, J., Herman, C. P., & Pliner, P. (1990). Perception and evaluation of body image: The meaning of body shape and size. (Olson & Zanna eds.). Self-inference processes: The Ontario symposium. Hillsdale NJ: Erlbaum. 87-114.

Roden, J., Silberstein, L. R., & Steigel-Moore, R. H. (1985). Women and weight: A normative discontent. (Sonderegger Ed.) Nebraska symposium on motivation: Vol 32. Psychology and gender. Lincoln: University of Nebraska. 267-307.

Rosen, J. C., & Leitenberg, H. (1982). Bulimia Nervosa: Treatment with exposure and response prevention. Behavior Therapy. 13, 117-124.

Rosen, J. C., & Leitenberg, H. (1985). Exposure plus response prevention treatment of bulimia nervosa. (Garner & Garfinkel eds.). Handbook of Psychotherapy for Anorexia Nervosa and Bulimia. New York: Guilford Press. 193-212.

Rosen, L., McKeag, D. B., Hough, D., & Curley, V. (1986). Pathogenic weight control behavior in female athletes. The Physician and Sportsmedicine. 14, 79-86.

Rosen, J. C., Tacy, B., & Howell, D. (1990). Life stress, psychological symptoms and weight reducing behavior in adolescent girsl: A prospective analysis. International Journal of Eating Disorders. 9, 17-26.

Ruderman, A. (1985). Dysphoric mood and overeating. Journal of Abnormal Psychology. 94, 78-86.

Ruderman, A., & Grace, P. (1988). Bulimics and restrtained eaters: A personality comparison. Addictive Behaviors. 13, 359-368.

Sacks, M. H. (1990). Psychiatry and sports. Annals of Sports Medicine. 5, 47-52.

Savin-Williams, R. (1979). Dominance hierarches in groups of early adolescents. Child Development. 50, 923-936.

Schuldt, D. G., & Johnson, W. G. (1990). Eating Disorders: Assessment and Treatment. Boston: Allyn & Bacon.

Seime, R., & Damar, D. (1991). Identification and treatment of an athlete with an eating disorder. (Etzel, Ferrante, & Pinkney eds.). Counseling College Student Athletes. Morgantown WV: Fitness Info Tech. 175-198.

Smith, N. J. (1980). Excessive weight loss and food aversion in athletes simulating anorexia nervosa. Pediatrics. 66, 139-142.

Steiner-Adair, C. (1986). The body-politic: Normal female adolescent development and the development of eating disorders. Journal of American Acadamy of Psychoanalysis. 14, 95-114.

Strober, M. (1980). Personality and symptomatological features in young, non-chronic anorexia nervosa patients. Journal of Psychosomatic Research. 24, 353-359.

Sundgot-Borgen, J. (1993). Prevalence of eating disorders in female elite athletes. International Journal of Sports Nutrition. 3, 29-40.

Sundgot-Borgen., J. (1994). Risk and trigger factors for the development of eating disorders in female elite athletes. Medicine and Science in Sports and Exercise. 26, No.4. 414-419.

Thompson, R., & Sherman, R. T. (1993). Helping Athletes with Eating Disorders. Champaign ILL: Human Kinetics Publishers.

Thornton, J. S. (1990). Feast or famine: Eating disorders in athletes. The Physician and Sportsmedicine. 18, No. 4. 116-122.

Tobin-Richards, M., Boxer, A., & Peterson, A. C. (1983). The psychological significance of pubertal change. (Brooks-Gunn & Peterson eds.). Girls at Puberty. New York: Plenium Press. 127-154.

Wagner, S., Halmi, K. I., & Maguire, T.V. (1987). The sense of personal ineffectiveness in patients with eating disorders: One construct or several? International Journal of Eating Disorders. 6, 495-505.

Williamson, D., Netemeyer, R., Jackman, L., Anderson, D., Funsch, C., Rabalais, J. (1995). Structural equation modeling of risk factors for the development of eating disorder symptoms in female athletes. International Journal of Eating Disorders. 17, No. 4. 387-393.

Wilson, G. (1984). Toward the understanding and treatment of binge eating. (Hawkins, Fremouw, & Clement eds.). The Binge-Purge Syndrome. New York: Springer. 264-289.

Woolsey, M. (1994). Nutritional Progress Report. Wickenberg, AZ: Remuda Research.

Yates, A., Leehy, K., & Shisslak, C. M. (1983). Running-an analogue of anorexia nervosa? The New England Journal of Medicine. 308, 251-255.

Appendix 1A

Eating Disorders (ED) in NCAA intercollegiate women's sports (810 reports)

SPORT	SPONSERING SCHOOLS	SCHOOLS REPORTING ED	% SPONSERING REPORTING ED
Gymnastics	108	52	48%
Cross Country	642	146	23%
Swimming (only)	395	83	21%
Diving (only)	395	22	06%
Track (running events)	537	111	21%
Basketball	762	101	13%
Soccer	293	37	13%
Field Hockey	219	27	12%
Volleyball	716	84	12%
Lacrosse	119	13	11%
Softball	556	53	10%
Skiing	39	3	08%
Tennis	694	58	08%
Golf	143	10	07%
Track (field events)	537	10	02%
Fencing	49	0	00%
Rifle	54	0	00%

Appendix 1B. Presence of pathogenic weight-control behavior in female athletes according to sport.

Spt	No. of Athletes	No. of Athletes With at least One Pathogenic Weight-Control Behavior	Self-induced Vomiting	Laxatives	Diet Pills	Diuretics	Binges more Than Twice Weekly	Excess Weight Loss
Basketball	13	1	1	0	0	0	0	0
Field Hockey	22	11	3	3	9	2	11	1
Golf	10	1	1	0	1	0	0	0
Gymnastics	19	14	10	7	11	3	11	7
Softball	30	7	0	5	6	1	4	1
Swimming	9	1	1	1	1	0	0	1
Tennis	25	6	4	3	5	1	2	1
Track / Field	23	6	0	5	5	2	2	0
T/F Distance	17	8	5	3	6	1	3	1
Volleyball	14	3	1	2	2	0	4	2
Totals	182 (100%)	58 (32%)	26 (14%)	29 (16%)	46 (25%)	10 (5%)	37 (20%)	14 (8%)

APPENDIX 2A

Subscale Items, Item-Total Scale Correlations for Eating Disorder (ED), Anorexia Nervosa (AN), and Nonpatient Female College (FC2) Groups

Scale/ Number		ED	AN	FC2
ive for Thinness				
*	I eat sweets and carbohydrates without feeling nervous.	.39	.38	.43
	I think about dieting.	.65	.77	.71
.	I feel extremely guilty after overeating.	.54	.56	.71
.	I am terrified of gaining weight.	.70	.77	.72
.	I exaggerate or magnify the importance of weight.	.40	.50	.61
.	I am preoccupied with the desire to be thinner.	.70	.69	.72
.	If I gain a pound, I worry that I will keep gaining.	.64	.74	.69
ulimia				
.	I eat when I am upset.	.54	.58	.45
.	I stuff myself with food.	.73	.73	.55
.	I have gone on eating binges where I felt that I could not stop.	.63	.63	.60
.	I think about bingeing (overeating).	.70	.69	.70
.	I eat moderately in front of others and stuff myself when they're gone.	.64	.67	.69
.	I have the thought of trying to vomit in order to lose weight.	.49	.63	.40
.	I eat or drink in secrecy.	.63	.73	.63
dy Dissatisfaction				
.	I think that my stomach is too big.	.58	.57	.55
.	I think that my thighs are too large.	.73	.69	.71
.*	I think that my stomach is just the right size.	.63	.65	.65
.*	I feel satisfied with the shape of my body.	.60	.54	.72
.*	I like the shape of my buttocks.	.67	.63	.71
.	I think my hips are too big.	.76	.72	.75
.*	I think that my thighs are just the right size.	.73	.69	.79
.	I think my buttocks are too large.	.78	.77	.76
.*	I think that my hips are just the right size.	.75	.69	.74
ieffectiveness				
.	I feel ineffective as a person.	.74	.79	.71
3.	I feel alone in the world.	.58	.68	.65
0.*	I feel generally in control of things in my life.	.62	.63	.69
4.	I wish I were someone else.	.56	.61	.46
7.	I feel inadequate.	.72	.81	.73
7.*	I feel secure about myself.	.73	.79	.69
	I have a low opinion of myself.	.72	.79	.61
.*	I feel that I can achieve my standards.	.61	.64	.47
	I feel that I am a worthwhile person.	.69	.75	.69
	I feel empty inside (emotionally).	.60	.68	.50
rfectionism				
.	Only outstanding performance is good enough in my family.	.58	.59	.53
9.	As a child, I tried very hard to avoid disappointing my parents and teachers.	.45	.37	.42
6.	I hate being less than best at things.	.64	.68	.53
5.	My parents have expected excellence of me.	.55	.57	.54
2.	I feel that I must do things perfectly or not do them at all.	.58	.79	.50
5.	I have extremely high goals.	.51	.66	.49
Interpersonal Distrust				
5.*	I am open about my feelings.	.60	.66	.62
7.*	I trust others.	.55	.49	.41
3.*	I can communicate with others easily.	.51	.62	.41
0.*	I have close relationships.	.61	.67	.58
4.	I have trouble expressing my emotions to others.	.62	.62	.51
4.	I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).	.58	.53	.57
7.*	I can talk about personal thoughts or feelings.	.66	.70	.61

Subscale Items, Item-Total Scale Correlations for Eating Disorder (ED), Anorexia Nervosa (AN), and Nonpatient Female College (FC2) Groups

Scale/ Number		ED	AN	FC2
Interoceptive Awareness				
	I get frightened when my feelings are too strong.	.54	.48	.60
	I get confused about what emotion I am feeling.	.61	.64	.58
*	I can clearly identify what emotion I am feeling.	.56	.57	.40
	I don't know what's going on inside me.	.58	.60	.58
	I get confused as to whether or not I am hungry.	.44	.42	.42
	I worry that my feelings will get out of control.	.60	.65	.51
	I feel bloated after eating a normal meal.	.30	.23	.25
	When I am upset, I don't know if I am sad, frightened, or angry.	.64	.61	.57
	I have feelings I can't quite identify.	.65	.64	.50
	When I am upset, I worry that I will start eating.	.30	.37	.45
Maturity Fears				
	I wish that I could return to the security of childhood.	.63	.71	.25
	I wish that I could be younger.	.51	.69	.40
	The happiest time in life is when you are a child.	.56	.65	.42
*	I would rather be an adult than a child.	.53	.63	.52
	The demands of adulthood are too great.	.46	.55	.45
*	I feel happy that I am not a child anymore.	.55	.65	.38
	I feel that people are happiest when they are children.	.58	.64	.39
*	The best years of your life are when you become an adult.	.57	.74	.49

Note. ED $N = 559$, AN $N = 155$, FC2 $N = 271$; items marked by an asterisk are reverse-scored.

APPENDIX 2B

Correlations Between EDI Subscales, the EAT-26, and the Restraint Scale for Eating Disorder Patients

Measures	*N*	EDI Subscales							
		DT	B	BD	I	P	ID	IA	MF
EAT Scores									
Total Score	553	.71*	.26*	.44*	.46*	.35*	.29*	.51*	.27*
Dieting	553	.74*	.20*	.49*	.43*	.33*	.25*	.44*	.24*
Bulimia & Food Preoccupation	553	.53*	.72*	.33*	.29*	.14	.07	.39*	.09
Oral Control	553	.14	−.28*	.04	.23*	.25*	.27*	.25*	.23*
Restraint	183	.61*	.57*	.44*	.37*	.26*	.15	.38*	.07

Note. DT = Drive for Thinness; BD = Body Dissatisfaction; I = Ineffectiveness; P = Perfectionism; ID = Interpersonal Distrust; IA = Interoceptive Awareness; MF = Maturity Fears.
*$p<.001$ for each comparison; for family of 40 comparisons, $p<.04$ (Myers, 1979).

APPENDIX 2C

Correlations Between EDI Subscales and Weight and Body Image Measures for Eating Disorder Patients

Measures	*N*	DT	B	BD	I	P	ID	IA	MF
Actual weight as % of average	421	.04	.19*	.35*	.04	−.07	−.15	.05	.00
Ideal weight	421	−.15	.07	−.02	−.16*	−.07	−.21*	−.09	−.09
Actual weight minus ideal weight	421	.16*	.18*	.47*	.18*	.02	−.02	.11	.08
Self−size estimation (Garner et al., 1976)	319	.25*	.04	.39*	.29*	.12	.21*	.16	.15
Ideal size estimation (Garner et al., 1976)	319	−.25*	−.07	−.47*	−.18	−.08	−.07	−.10	−.11
Body dissatisfaction (Berscheid et al., 1973)	169	.37*	.24	.63*	.59*	.33*	.50*	.48*	.30*
Dissatisfaction with maturational regions (Berscheid et al., 1973)	169	.41*	.24	.70*	.40*	.25*	.30*	.38*	.19

Note. DT = Drive for Thinness; BD = Body Dissatisfaction; I = Ineffectiveness; P = Perfectionism; ID = Interpersonal Distrust; IA = Interoceptive Awareness; MF = Maturity Fears.
*$p<.001$ for each comparison; for family of 56 comparisons, $p<.056$ (Myers, 1979).

APPENDIX 2D

Correlations Between EDI Subscales and Other Psychometric Instruments for Eating Disorder Patients

Measures	*N*	DT	B	BD	I	P	ID	IA	MF
Feelings of Inadequacy	327	.52*	.16	.37*	.76*	.21*	.55*	.47*	.39*
Locus of Control	196	.29*	.29*	.25*	.44*	.15	.19	.25*	.18
Lack of Self Control	196	.25*	.41*	.18	.26*	.08	.08	.26*	.03
BDI	188	.52*	.21	.49*	.72*	.32*	.54*	.70*	.43*
Physical Anhedonia	179	.10	.26*	−.02	−.03	.04	−.08	.02	−.02
HSCL−Total	335	.41*	.20*	.36*	.67*	.40*	.45*	.66*	.38*
Somatization	335	.32*	.20*	.27*	.41*	.28*	.27*	.50*	.23*
Obsessionality	335	.30*	.18*	.27*	.56*	.32*	.37*	.55*	.31*
Anxiety	335	.37*	.14	.26*	.55*	.39*	.34*	.61*	.32*
Depression	335	.38*	.16	.33*	.73*	.40*	.48*	.61*	.45*
Interpersonal Sensitivity	335	.34*	.17	.32*	.59*	.37*	.40*	.49*	.32*

Note. DT = Drive for Thinness; BD = Body Dissatisfaction; I = Ineffectiveness; P = Perfectionism; ID = Interpersonal Distrust; IA = Interoceptive Awareness; MF = Maturity Fears.
*$p<.001$ for each comparison; for family of 88 comparisons, $p<.098$ (Myers, 1979).

EDI Individual Scores Groups 1 and 2

Sub Scale GROUP 1	DT	B	BD	I	P	ID	IA	MF
#								
1	16	2	17	6	3	0	7	8
2	4	2	0	0	3	1	0	3
3	2	0	2	0	8	0	0	3
4	0	0	4	0	3	0	0	4
5	6	0	5	3	2	5	1	0
6	2	0	9	0	5	7	4	14
7	7	0	5	1	8	0	0	1
8	14	1	8	0	9	0	3	0
9	0	0	0	4	1	3	2	3
10	9	1	23	0	5	4	2	4
11	1	4	0	4	9	1	0	8
12	8	4	13	3	5	2	3	2
13	12	4	14	2	12	1	5	7
GROUP 2 (Diagnosed Bulimics)								
1	20	19	24	14	11	0	13	0
2	14	16	19	6	13	7	9	5

INSTRUCTIONS

First, write your name and the date on your EDI-2 Answer Sheet. Your ratings on the items below will be made on the EDI-2 Answer Sheet. The items ask about your attitudes, feelings, and behavior. Some of the items relate to food or eating. Other items ask about your feelings about yourself.

For each item, decide if the item is true about you ALWAYS (A), USUALLY (U), OFTEN (O), SOMETIMES (S), RARELY (R), or NEVER (N). Circle the letter that corresponds to your rating on the EDI-2 Answer Sheet. For example, if your rating for an item is OFTEN, you would circle the O for that item on the Answer Sheet.

Respond to all of the items, making sure that you circle the letter for the rating that is true about you. DO NOT ERASE! If you need to change an answer, make an "X" through the incorrect letter and then circle the correct one.

---

1. I eat sweets and carbohydrates without feeling nervous.
2. I think that my stomach is too big.
3. I wish that I could return to the security of childhood.
4. I eat when I am upset.
5. I stuff myself with food.
6. I wish that I could be younger.
7. I think about dieting.
8. I get frightened when my feelings are too strong.
9. I think that my thighs are too large.
10. I feel ineffective as a person.
11. I feel extremely guilty after overeating.
12. I think that my stomach is just the right size.
13. Only outstanding performance is good enough in my family.
14. The happiest time in life is when you are a child.
15. I am open about my feelings.
16. I am terrified of gaining weight.
17. I trust others.
18. I feel alone in the world.
19. I feel satisfied with the shape of my body.
20. I feel generally in control of things in my life.
21. I get confused about what emotion I am feeling.
22. I would rather be an adult than a child.
23. I can communicate with others easily.
24. I wish I were someone else.
25. I exaggerate or magnify the importance of weight.
26. I can clearly identify what emotion I am feeling.
27. I feel inadequate.
28. I have gone on eating binges where I felt that I could not stop.
29. As a child, I tried very hard to avoid disappointing my parents and teachers.
30. I have close relationships.
31. I like the shape of my buttocks.
32. I am preoccupied with the desire to be thinner.
33. I don't know what's going on inside me.
34. I have trouble expressing my emotions to others.
35. The demands of adulthood are too great.
36. I hate being less than best at things.
37. I feel secure about myself.

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

EDI-2 ANSWER SHEET

David M. Garner, Ph.D.

Name _____ Date _____

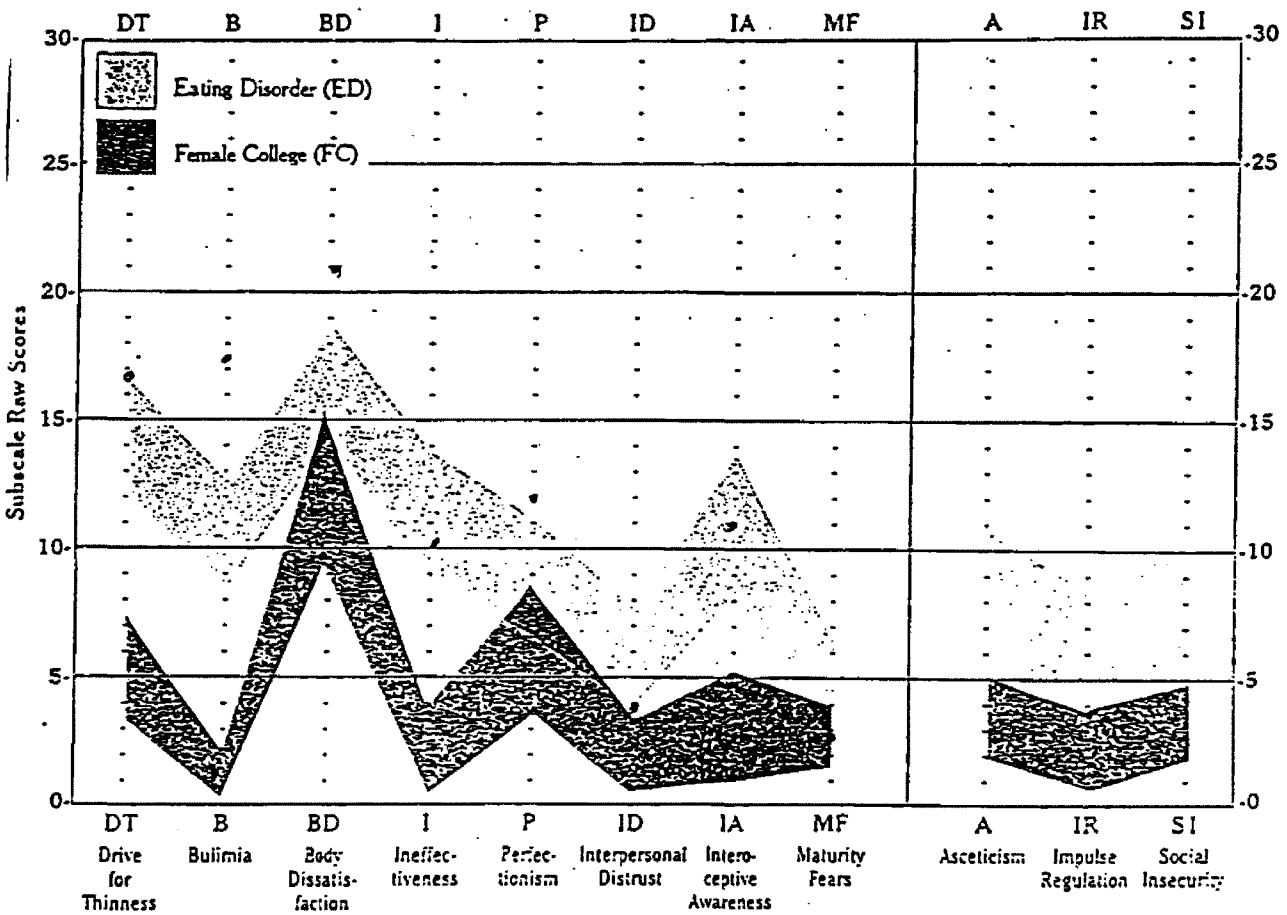
Fill in your name and the date above. Follow the Instructions in the EDI-2 Item Booklet and enter your ratings on this sheet.

A=ALWAYS U=USUALLY O=OFTEN S=SOMETIMES R=RARELY N=NEVER

1	A U O S R N	20	A U O S R N	39	A U O S R N	58	A U O S R N	76	A U O S R N
2	A U O S R N	21	A U O S R N	40	A U O S R N	59	A U O S R N	77	A U O S R N
3	A U O S R N	22	A U O S R N	41	A U O S R N	60	A U O S R N	78	A U O S R N
4	A U O S R N	23	A U O S R N	42	A U O S R N	61	A U O S R N	79	A U O S R N
5	A U O S R N	24	A U O S R N	43	A U O S R N	62	A U O S R N	80	A U O S R N
6	A U O S R N	25	A U O S R N	44	A U O S R N	63	A U O S R N	81	A U O S R N
7	A U O S R N	26	A U O S R N	45	A U O S R N	64	A U O S R N	82	A U O S R N
8	A U O S R N	27	A U O S R N	46	A U O S R N			83	A U O S R N
9	A U O S R N	28	A U O S R N	47	A U O S R N	65	A U O S R N	84	A U O S R N
10	A U O S R N	29	A U O S R N	48	A U O S R N	66	A U O S R N	85	A U O S R N
11	A U O S R N	30	A U O S R N	49	A U O S R N	67	A U O S R N	86	A U O S R N
12	A U O S R N	31	A U O S R N	50	A U O S R N	68	A U O S R N	87	A U O S R N
13	A U O S R N	32	A U O S R N	51	A U O S R N	69	A U O S R N	88	A U O S R N
14	A U O S R N	33	A U O S R N	52	A U O S R N	70	A U O S R N	89	A U O S R N
15	A U O S R N	34	A U O S R N	53	A U O S R N	71	A U O S R N	90	A U O S R N
16	A U O S R N	35	A U O S R N	54	A U O S R N	72	A U O S R N	91	A U O S R N
17	A U O S R N	36	A U O S R N	55	A U O S R N	73	A U O S R N		
18	A U O S R N	37	A U O S R N	56	A U O S R N	74	A U O S R N		
19	A U O S R N	38	A U O S R N	57	A U O S R N	75	A U O S R N		

EDI-2 PROFILE FORM

Name Group 1- Mean scores Age _____ Sex _____ Date _____



	DT	B	BD	I	P	ID	IA	MF	A	IR	SI
Raw Score	17	17.5	21.5	10	12	3.5	11	2.5	___	___	___
Percentile Score	61	90	65	50	74	42	58	59	___	___	___

Normative Group = Normative Table =

Conversion of Raw Scores to Percentile Ranks for Eating Disordered Patients

Raw Score	Drive for Thinness	Bulimia[a]	Body Dissatis-faction	Ineffec-tiveness	Perfectionism	Inter-personal Distrust	Intero-ceptive Awareness	Maturity Fears	Asceticism	Impulse Regulation	Social Insecurity	Raw Score
30+												30+
29				99								29
28												28
27				98			99					27
26			84				98					26
25			80	96			97					25
24			75	94			96					24
23			70	92			95					23
22			67	90			93		99			22
21			64	87			91				99	21
20	88	98	60	85			89	99		59	96	20
19	81	95	56	83			87		98	98		19
18	73	92	53	81			84	98		97	94	18
17	61	88	49	78	96	99	81		97	96		17
16	53	84	47	74	93	98	78	96	96		93	16
15	47	78	44	69	89	97	73		94		92	15
14	41	73	41	66	84	95	70	95	93	93	90	14
13	35	67	37	62	80	93	66	94	90	89	87	13
12	30	62	34	58	74	89	62	92	85	87	81	12
11	27	56	30	53	67	85	58	91	83	86	75	11
10	23	51	28	50	60	82	52	89	76	82	66	10
9	20	44	24	46	54	77	47	88	67	80	62	9
8	17	39	22	42	47	72	41	85	62	73	57	8
7	14	32	18	38	41	67	36	82	50	66	47	7
6	11	27	15	33	34	60	29	77	38	61	33	6
5	9	21	12	29	29	55	25	71	31	57	27	5
4	7	15	9	25	23	47	20	65	22	49	21	4
3	6	12	7	20	17	39	16	54	12	39	15	3
2	4	7	6	15	11	32	11	42	4	31	10	2
1	3	5	3	11	7	23	6	28	1	25	6	1
0	2	3	2	5	4	13	3	17		15	2	0

Note. For original EDI subscales, $N = 889$; for EDI provisional subscales, $N = 107$.
[a]Excluding AN-R ($N = 760$)