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Eating attitudes in fourth-, sixth- and eighth-grade females

Rhyne, Martha Cornelia, Ed.D.

The University of North Carolina at Greensboro, 1988

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EATING ATTITUDES IN FOURTH-, SIXTH-
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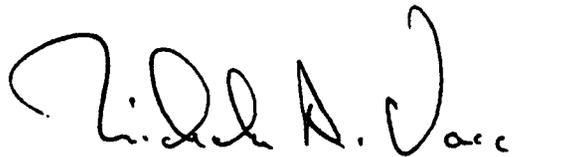
by

Martha Cornelia Rhyne

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the Faculty of the Graduate School at
The University of North Carolina at Greensboro
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of the Requirement for the Degree
Doctor of Education

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APPROVAL PAGE

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The purpose of this study was two-fold. First, the changes in eating attitudes in pre-adolescent girls were examined. Secondly, variables were studied which might prove helpful in screening females at high risk for developing eating disorders.

The Adapted Eating Attitudes Test (AEAT) was used as the dependent measure and was administered to 109 fourth-, 104 sixth-, and 166 eighth-grade females attending the Lincoln County North Carolina public schools. Independent variables included age, school achievement test scores, school ability test scores, absenteeism, family income (i.e. participation/non-participation in the subsidized lunch program), number of siblings in the family, race, height, weight, dieting history, weight satisfaction, body-image and anxiety.

Statistical analyses were conducted in the following manner. Descriptive information was gathered and reported for the variables. It was found that fourth-, sixth-, and eighth-grade females had approximately the same scores on the AEAT. There was no significant difference in the mean AEAT scores across grade levels. Finally, a multiple regression analysis was computed for the combined sample, as well as for

each grade level, to determine the amount of variance in the AEAT scores that had been accounted for by the independent variables.

Results of these procedures indicated that there was no statistically significant difference in mean AEAT scores across grade levels. The full model accounted for 32% of the variance in AEAT scores with analysis by grade level yielding coefficients of determination of 44% for fourth- and sixth-grades and 27% for eighth-grade females. Variables yielding statistically significant unique contributions included past dieting history, Otis-Lennon School Ability Test scores, school location, weight satisfaction, and the height/weight ratio.

Because the selected independent variables can be used to predict elevated AEAT scores, the results of this study will aid school counselors in screening students at high risk for developing eating disorders. This information can also be helpful for school counselors when developing intervention programs dealing with nutrition, diet, and exercise. However, further research is needed to determine additional variables associated with pre-adolescents at high risk for developing eating disorders.

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CHAPTER I
INTRODUCTION

There has been and continues to be a focus in American society on fitness, thinness, and beauty. This strong desire for thinness appears to be related to the increase in eating disorders (Pope, Hudson, & Jurgelum, 1984; Rourke, Smith, & Nolte, 1984). Awareness of and concern for eating disorders is increasing throughout the world (Peters, Butterfield, Swassing, & McKay, 1984). There is a dominate opinion in American society that thinness equals beauty and health (Kaye, 1979). Media reports on models, beauty pageant contestants, Playboy bunnies, and celebrities have focused the American public's attention on thinness and eating disorders. This social trend toward increased thinness has been reflected in the Miss America beauty pageant contestants, and Playboy centerfolds. In 1959 Playboy bunnies' weighed 9% less than the average American female's weight as compared to 17.5% less in 1978 (Garner, Garfinkel, Swartz, & Thompson, 1980). Miss America winners have had an average weight of only 82.5% of the average weight of American women (Garner et al., 1980).

While women's body weights and measurements have decreased over the past twenty years, their heights have increased (Garner et al., 1980). Because models, celebrities, beauty pageant contestants, and Playboy Bunnies are viewed by many American women as the ideal size and shape, this decrease in desired weight appears to have become the standard by which American women evaluate themselves. Media reports on celebrities with eating disorders such as Cherri Boone, Karen Carpenter, and Kathy Rigby McCoy have brought this problem to the public's awareness (Harris, 1984).

The desire for thinness has also affected the American diet, which over the last century has deteriorated to a diet composed of 60% to 70% empty calories devoid of nutrients (Ballentine, 1979). The Ten-State Nutrition Survey of the United States Department of Health, Education and Welfare in 1972, found that children 10 years to 16 years of age were nutritionally at risk (Lindholm, 1984). Poor nutrition has been found to result from a lack of knowledge as well as from dieting behaviors. Sbonck (1981) described the results of a nutrition questionnaire given to 490 teenagers in grades 8 to 10. The questionnaire consisted of 10 items and used a Likert Scale to measure responses (Sbonck, 1981). Survey results showed that

adolescents recognized some of the dangers of junk food, but not the more subtle dangers of poor nutrition.

Sbonck (1981) concluded that many children are ignorant of the relationship between diet and health.

Although data on the topic is sparse, the females struggle with weight issues lasts their entire lifetime (Striegel-Moore, 1986). Weight concerns and eating problems of females should be examined across the life span from both a clinical and a theoretical perspective (Striegel-Moore, 1986). Females are under increasing psychosexual demands and simultaneously are experiencing a less secure female sex-role (Tolstrup, 1975). As a result of psychological and cultural pressures, pre- and post-adolescent females may be psycho-physiologically vulnerable, with this vulnerability remaining dormant until the onset of pubertal changes (Maloney & Klykylo, 1983).

The females's struggle with eating disorders are by no means new to society. In case reports from 1868 and 1874, Gull (1874) described the refusal to eat and the subsequent weight loss of young girls and named the syndrome Anorexia Nervosa. In seventeenth century literature, Lora, daughter of Miles Standish had a possible case of anorexia as she "pinned away" for her

beloved and as a result, died of her condition (Blitzer, Rollins, & Blackwell, 1961).

The term "eating disorder" can include multiple conditions such as anorexia nervosa, bulimia nervosa (Russell, 1976), compulsive overeating, obesity, bulimarexia (White & Boskind-Lodahl, 1981), purge-vomitters (Beaumont, Beardwood, & Russell, 1972), dysorexia (Guiora, 1967), or abnormal-normal weight control syndrome (Crisp, 1982). Although the American Psychiatric Association (1980) defined four eating disorders (i.e., anorexia nervosa, bulimia nervosa, pica, and rumination), anorexia nervosa and bulimia nervosa are the two disorders usually included in discussions of eating problems in society since they affect larger numbers of people than the other two disorders.

The number of annually reported and treated cases of anorexia nervosa and bulimia is increasing. Diagnosed cases of anorexia nervosa have risen continually since 1950 and appear to be reaching epidemic proportions in females from upper socioeconomic levels (Maloney & Klykylo, 1983; Steiner, 1982). Annual incidence rates of anorexia occurring from 1931 to 1960 were 0.24 per 100,000, but since 1969, the number of reported cases has more than doubled to 0.64 per 100,000

(Steiner, 1982). A study by Duddle (1973) of anorexia nervosa cases admitted to Manchester University Hospital in England, showed an increase from 0 in 1966, 1967, and 1968 to 13 cases admitted in 1971 and 1972. A more recent study found that 1 out of every 200 (i.e., 0.5%) American females will develop anorexia nervosa (Slavin, 1987). More than 90 percent of these diagnosed cases are adolescent or young-adult females (Office of Research Reporting, 1983). Pope, Hudson, and Yurgelum-Todd (1984) surveyed 14 to 23 year old females with results supporting the increase of eating disorders.

Eating disorders are devastating illnesses that affect both the patient and the family (Sours, 1979). Anorexia and the related eating disorder, bulimia, can be life threatening and continue so for many years (Steiner, 1982). Anorexia nervosa, for example, is one of the few psychiatric illnesses that has a small but significant death rate (Browning, 1968). Also, studies of clinically diagnosed cases of anorexia and bulimia have shown that these disorders involve the interaction of physiological, psychological, developmental, and cultural factors (Garfinkel & Garner, 1982). Stroeber (1981), who examined personality variables which discriminate anorexic from nonanorexic females, indicated that the ongoing physiologic distress, social

deterioration, and other aspects of clinical anorexia nervosa caused much personality deviance that remained after initial weight loss and health were restored (Stroeber, 1981).

The chronic pattern of eating disorders and their resistance to treatment make them especially problematic (McCallum, 1985). Usually cases are not identified and treated until the disorder is well developed, making them much more difficult to treat physically and psychologically. Treatment of bulimia and anorexia is difficult with eating disorders being persistent problems (Boskind-Lodahl & White, 1978). The combination of good/bad thinking, restrictive dieting, and binging behaviors result in complications and prolonged duration of the eating disorder.

In addition to clinical cases of anorexia and bulimia, a number of studies have commented on the occurrence of subclinical cases of eating disorders; cases which were not manifested at the time of the study, but later presented serious eating problems (Button & Whitehouse, 1981). Nylander (1971) supported the presence of subclinical cases, suggesting that the disorders may be expressed in a mild or incipient form. Unlike those that are clinically diagnosed, subclinical cases are not at the extreme ends of the eating disorder

continuum (Nylander, 1971). Bruch (1973) extended the idea of subclinical eating disorders by coining the term "thin fat" syndrome, a term used to describe individuals who have psychological characteristics of anorexia nervosa but have not manifested significant weight loss (Bruch, 1973).

Current assumptions regarding eating disorders relate primarily to older adolescents and adults with little research available on the development or the frequency of eating disorders in younger females. However there has been an increase in anorexia nervosa in pre-adolescent and adolescent females, as well as in adults (Richards, 1982). The number of children with anorexia nervosa has doubled in each decade since 1950 (Richards, 1982). Bentovin (1970) reported an incidence of eating disorders as high as 45% in young children. A survey of tenth-grade students in Greensboro, North Carolina, found that 10% had tried to lose weight by vomiting or using laxatives and other drugs (Greensboro Daily News and Record, 1986). A study by Rourke, Smith, and Nolte (1984) found 25% to 30% of normal weight students in grades seven through twelve perceived themselves as overweight. In a speech on April 2, 1986, at Frye Memorial Hospital, Dr. William Rader of the Rader Institute Eating Disorder Clinics said that in his

opinion 75% of nine year old children are on or have been on a diet.

Eating disorders are of concern for school personnel for several reasons. First, onset of eating disorders most often occurs during the adolescent years (Peters, Butterfield, Swassing, & McKay, 1984). Second, as a result of the Education Act of 1975, school faculty are likely to be confronted with serious medical and/or psychological problems such as eating disorders (Stiver & Dobbins, 1980). Third, school personnel work with student gymnasts, wrestlers, drill team members, cheerleaders, dancers, and track team members who are often at high risk for developing eating disorders (Frey, 1984). Finally, eating disorders can also affect learning and overt behavior. Research as early as 1965 reported the long-term harmful effects from severe under-nourishment (Eitinger, 1965). Increasing evidence is being found indicating that many learning and behavior problems are directly related to diet (Pearson & Long, 1982). Hubbard (1984) reported that children who experience learning problems which remediation has not improved should be evaluated in terms of diet. Garfinkel and Garner (1982) stated that severely restricted diets can cause psychological as well as cognitive problems such as food preoccupation, poor

concentration, isolation, depressions, and drastic mood swings.

Due to the impact of eating disorders on the educational process, the schools are the appropriate setting for educational programs addressing the relationship between diet, nutrition, and health (Sbonck, 1981). A psychoeducational approach for treating pre-adolescent anorexic females within the school setting has been examined by Cotugno (1980) and Hedrick (1984). This approach is based on the belief that anorexic behaviors are a reflection of the subjects' academic-cognitive style, making the educational setting the preferred site for treatment. Psychoeducational goals are: (a) to establish a working relationship, (b) to restructure ego deficiencies, (c) to work through resistances resulting from psychological and cognitive stress, and (d) to work cooperatively with the psychological treatment. Hedrick (1984) suggested therapy groups for school children as a means for dealing with weight problems or eating disorders.

Further research is needed on the varying clinical manifestation of eating disorders as they appear in a broader group of people (Button & Whitehouse, 1981). Studies are needed focusing on younger, nonchronically

ill samples to determine at what age unhealthy eating and dieting behaviors begin (Stroeber, 1981; Wooley, 1986). Hedrick (1984) cited a need for study of eating disorders in school children.

There is also a need to record aspects of general psychopathology and psychosocial adjustment at the time of onset, as well as during the eating disorder (Steinhauser, 1983). Study of pre-pubertal cases of anorexia nervosa can provide an opportunity to examine existing ideas as well as offer explanations regarding the less frequent occurrence of eating disorders in select sub-groups (Jacobs & Isaacs, 1986). Garner and Garfinkel (1980) stated that prospective studies need to follow "high risk" individuals from an early age to identify psychological factors before they combine with the physical and psychological consequences of the disorders (Garner & Garfinkel, 1980).

Increasingly, researchers are calling for studies dealing with detection and prevention of eating disorders (Stroeber, 1981; Tolstrup, 1975). Early intervention is associated with good outcomes and therefore, the investigation of subclinical cases has important therapeutic implications (Button & Whitehouse, 1981; Steiner, 1982). The difficulties of overcompliance and the extreme concentration on academic

achievement in eating-disordered children identify schools as a possible intervention, and treatment site. If methods of early screening and intervention can be found, school personnel will be in a better position to establish preventative programs (Peters, Butterfield, Swassing, & McKay, 1984). Peters et al. (1984) stated that improved education, identification, and preventative programs may be the key to diminishing the incidence and the severity of the problem.

Effective, early screening can result in several positive outcomes. First, early screening would allow intervention and preventive measures to be taken by teachers and school counselors. Second, early identification and tracking of girls at high risk would reduce the number of cases of anorexia nervosa and bulimia in older females. Third, early detection and intervention would decrease the seriousness of the disorder and reduce the time and money required for treatment. Finally, once a screening device and predictor variables for girls have been developed, methods for effective treatment could be studied.

In summary, it is clear that eating disorders are clearly increasing in both young and older females; disorders which are long term conditions that are devastating both physically and emotionally. While

research on adolescents and adults is fairly abundant, little significant research has been conducted on pre-adolescent females.

Needed is research that examines the existence of eating disorders in children and the specific variables associated with the problem in pre-adolescent females. Researchers need to know at what age eating disordered attitudes first begin to manifest themselves so that screening, early intervention, and/or prevention are possible. In addition, specific useful variables for screening this younger and seldom-researched group must be determined. Once predictor variables for girls are identified, methods for effective treatment can be studied.

Statement of the Problem

The problem to be investigated in this study is two-fold. The first problem will be to determine if there has been a change through time in the development of eating attitudes, beliefs, and behaviors among pre-adolescent females. The second problem is to examine other variables associated with eating attitudes within this age group.

Purpose of the Study

This research will have two purposes. First, the study will examine differences in eating attitudes among

fourth-, sixth-, and eighth-grade females. Second, variables useful in early detection of eating disorders in high risk pre-adolescent females will be identified.

Currently, predictor variables are based on existing literature which primarily pertains to older adolescent and adult females. This study will result in determining broad demographic factors and age differences that are important influencing factors in the identification of younger girls at high risk for eating disorders. Based on a review of the literature and a pilot study conducted by the researcher, possible related variables of achievement, school ability index (i.e. IQ), absenteeism, family income, family size, race, height/weight ratio, dieting history, weight satisfaction, body-esteem, and school anxiety have been determined.

Definition of Terms

To aid in the clarity of this research, specific terms must be operationally defined. The terms refer to the dependent and the independent variables used for this research and their method of measurement.

Eating disorders is defined as a distorted concern over becoming fat, preoccupation with food and eating, and distorted body image. Individuals may be concerned with dieting, weight, and shape (Cooper, Waterman,

Fairburn, 1984; Fairburn, 1983; Garfinkel & Garner, 1982). Eating disorders will be measured using the Adapted Eating Attitudes Test (AEAT) (Vacc & Rhyne, 1987).

Academic achievement is the total battery scale score of the California Achievement Test (CAT) as recorded at the last testing period (Tiegs & Clark, 1970).

School ability index (SAI) as measured by the Otis-Lennon School Ability Test (1979), applies to the abilities needed to succeed in educational endeavors.

Family income level is defined by the lunch status of the students. Lunch status is determined by the schools based on family income and the number of dependents in the family. Students participating in subsidized program receive a free or reduced price lunch.

Family size is recorded as the number of children living in the home. Included are adopted children, step-children, and natural born children. Information will be obtained from personal data sheets in the children's cumulative folders.

Height/weight ratio is a ratio of each female's height divided by her weight. The ratio will serve as

an index of "thinness" as a means of determining the effect of body-size on eating attitudes.

Diet history is defined by a "yes" or a "no" answer on a self-report questionnaire item concerning previous dieting behavior. The questionnaire was developed for this study.

Body-esteem is measured by the self-report questionnaire response concerning satisfaction with appearance.

School anxiety will be measured by the self report questionnaire response concerning self-perceived anxiety over school and school situations.

Organization of Chapters

In this study, Chapter Two will present literature related to eating disorders in girls. Because there is a limited amount of literature restricted to very young girls, some research concerning older girls and adults have been included. Many of these studies emphasize the need for study of younger girls. Chapter Three will present the methodology for this study including information on the justification for selected independent variables, hypotheses, population description, instruments, procedures, and the data analyses methods. The study results are reported in

Chapter IV with the discussion, recommendations and conclusions presented in Chapter V.

CHAPTER II

REVIEW OF LITERATURE

Included is research on (1) general characteristics of females with eating disorders, (2) eating disorders among adolescent and adult females, (3) eating disorders among pre-adolescent females, and (4) assessment instruments for eating disorders. Each of these four major sections will include information regarding predisposing factors, symptoms, and outcome of treatment.

General Characteristics of Eating Disorders

Many studies have been conducted on the various characteristics of people with eating disorders. While the two major eating disorders, anorexia nervosa and bulimia are not identical, both have similar multiple factors (Maloney & Klykylo, 1983); age of onset, family system, physical symptoms, behavioral symptoms, psychological symptoms, interpersonal difficulties, low self-esteem, and distortion of body image.

Age of Onset

Age of onset varies, but most frequently ranges from 10 to 25 years of age (Beaumont, 1972; Harding, 1985; Schwabe, Lippe, Chang, Pops, & Yager, 1981;

Steiner, 1982). Beaumont (1972) reported the greatest number of cases of anorexia nervosa appeared in people between 10 and 20 years of age. Schwabe et al. (1981) described the onset of anorexia nervosa as ranging from 10 to 20 years of age with a peak in mid-adolescence (13.75 years as a mean age). Harding (1985) supported these findings with a reported age of onset between 12 and 25 years old. Whenever onset occurs, the disorders have a chronic pattern with increases and remissions of symptoms (Steiner, 1982). Few spontaneous recoveries have been reported with the duration of the disorder ranging from a few months to a lifetime (Steiner, 1982).

Family System

The families of eating disordered girls have distinctive and often dysfunctional characteristics (Leinhan & Sanders, 1984). Generally, these families are well-established, well-functioning, and set in their ways (Bruch, 1980). The majority of families with an eating-disordered child are female dominated and have few male siblings (Harding, 1985). Bruch (1980) reported that two-thirds of the families had daughters only, with many of the eating-disordered children being the first born (Bruch, 1980). As children, eating-disordered females were often the responsible child in the family (Bauer, 1984). Other family characteristics

found by Liebman, Sargent, and Silver (1983) include pseudo-rationality, denial of family problems, sacrificing for the children, and family enmeshment. Family stability is emphasized (Bruch, 1980; Harding, 1985) with the concept of special achievement rarely openly expressed, yet firmly built into the family system (Bruch, 1980).

Distinctive family interaction patterns and parenting styles are also present in eating-disordered families. Minuchin and Fisherman (1981) who studied the families of anorexic patients admitted to the Philadelphia Child Guidance Clinic and Children's Hospital, found that these families were characterized by strong enmeshment, overprotectiveness, and rigidity (Minuchin & Fisherman, 1981). Often there was a lack of conflict resolution, as well as excessive involvement of the eating-disordered child in marital and family conflicts (Minuchin & Fisherman, 1981). Marital conflicts have been frequently found though seldom explicitly expressed. The weight loss of the child may serve a functional role within the dysfunctional family, with the eating-disordered female viewed as the "scapegoat" and sole cause of any family tension (Minuchin, Rosman, & Baker, 1978). When the eating-

disordered child received treatment, the parents' often divorced (Minuchin et al., 1978).

Parenting styles also have shown conspicuous characteristics. Bruch (1962) found little encouragement of the child's self-expression and/or reinforcement of the child's decisions. Children were well-cared for and exposed to many stimulating influences in education, the arts, and athletics (Bruch, 1962). Most things were done for the children with much given to them (Bruch, 1962). Many bulimic college women have reported that they had not received parental support at a crucial point in their childhood (Bauer, 1986). Baird and Sights (1986) found appropriate tasks were not encouraged by the parents and, as a result, the children developed a sense of self-doubt about their ability to function independently. Females within these families do not develop the internal reassurance to appease anxiety in times of loss or separation.

The previously described family system results in pleasing, compliant female with a complete lack of reliance on her inner resources, ideas, and autonomous decisions (Bruch, 1962). Bemis (1978) supported these findings, reporting that family interaction inhibited the development of self-directed behavior.

Symptoms

Diagnostic symptoms of anorexia nervosa vary but generally require hospitalization due to severe weight loss and the resulting complications. Anorexia nervosa has been defined by the Diagnostic and Statistical Manual III (DSM III) (Freighner, Robbins, Guze, Woodrudd, Winokur & Munoz, 1972) based on the following criteria: (a) onset prior to 25 years of age; (b) distorted attitudes regarding eating, food, or weight which override hunger, admonitions or threats; (c) denial of the illness; (d) distorted body image; (e) no known medical cause for the problem; (f) no other known psychiatric disorder; and (g) weight loss of at least 25% original body weight. There has been some disagreement regarding the diagnostic criteria of amount of weight loss. Lippe (1983) reported that weight loss might be less than the 25% loss defined by the DSM-III if many of the other features were exhibited. As a result, the DSM - III - R (1987) listed the weight loss criteria from 25% to 15% of pre-illness weight.

The diagnostic criteria for bulimia includes (a) recurrent episodes of binge eating, (b) awareness that the eating pattern is abnormal, (c) fear of not being able to stop eating voluntarily, (d) depressed mood and self-deprecating thoughts following binges, and

(e) bulimic episodes not due to anorexia or any known physical disorder (Steiner, 1982). In addition, at least three of the following must be exhibited: consumption of high-calorie; easily ingested food during a binge; inconspicuous eating during a binge; termination of such eating episodes by abdominal pain, sleep, social interruption, or self-induced vomiting; repeated attempts to lose weight by severely restrictive diets, self-induced vomiting, or use of cathartics or diuretics; and/or frequent weight fluctuations greater than ten pounds due to alternating binges and fasts (Steiner, 1982).

Physical symptoms. While the diagnostic criteria of the DSM III are clear cut, various additional physical symptoms of eating disorders have been noted. Due to nutritional deprivation, the body of the anorexic will respond with many compensating regulatory changes (Lippe, 1983). Eating disorders may be accompanied by amenorrhea, lanugo, bradycardia, overactivity, bulimia, or vomiting (Freighner et al., 1972). If vomiting (i.e., bulimia) is present, there may be sexual aggressiveness, painless swelling of salivary glands, electrolyte imbalances, and/or erosion of dental enamel (Lippe, 1983). Halmi (1981) listed additional symptoms of hypotension, hypothermia, dry skin, hypoglycemia,

hair loss, leukopenia, and fatigue. Other physical effects of eating disorders include arrhythmia (Mitchell & Gillum, 1980), electrolyte and hypothalamic dysfunction (Vigersky & Lorigou, 1977), gastric ulcers (Kline, 1979), sucrose sensitivity (Lacey Stanley, Crutchfield & Crisp, 1977), and superior mesenteric artery syndrome (Sours & Vorhaus, 1981). Gastrointestinal pain resulting from delayed gastric emptying may be prominent in anorexia nervosa and may persist long after weight is restored (McCollum, 1985). Schoettle (1979) found that pancreatitis with its accompanying weight loss, abdominal pain, and vomiting may be another complication of anorexia nervosa.

Behavioral symptoms. Certain behaviors are also characteristic of eating disordered people, with previous behavior patterns changing after the onset of the disorder. Prior to onset, eating-disordered females have been described as model children who never caused any problems (Steiner, 1982). Anorexic females have been found to be eager to please, helpful at home, dependable (Bruch, 1962), and extroverted prior to the illness (Harding, 1985). Female anorexics at the Clark Institute of Psychiatry were found to experience themselves as acting only in response to the demands of others and never as a result of their own desires

(Bruch, 1962). The weight loss is seen as the only means of control available, and is accomplished by either exercising excessive control through fasting or by a complete lack of control that results in gorging and vomiting (Zeller, 1982). Following onset of the eating disorder, these females become very secretive, although some specific habits have been observed (Frey, 1984). Frey (1984) found that eating-disordered females made frequent trips to the bathroom to vomit, or as a result of laxative and/or diuretic abuse. The anorexics in Frey's (1984) study were obsessed with food and behaved very rigidly when eating (Frey, 1984). Both anorexics and bulimics often avoided eating in public places, such as school cafeterias, with some stealing food and/or bingeing on food from vending machines (Frey, 1984). Additional overt behaviors include sleeping in class as a result of lost sleep due to their eating behaviors, fainting from malnutrition (Frey, 1984), and excessive exercise (Crisp, 1975). Substance abuse has been found especially prevalent in bulimics or the bulimic subtype of anorexia nervosa (Stroeber, 1981).

Achievement-related behaviors of eating disordered girls are also very distinctive. Steiner (1982) described eating disordered girls as very good students who exhibited an abnormal drive for achievement and

perfection (Harding, 1985). The high achievements of anorexics and bulimics have been found to have no effect on their low self-esteem (Baird & Sights, 1986). Rather, eating-disordered girls attributed their success to those people who supported them instead of to themselves (Baird & Sights, 1986). Excellence in achievement as well as seemingly independent behaviors, develop as a reaction to dependency yearnings that are frequent in eating-disordered girls (Baird & Sights, 1986).

Psychological symptoms. The underlying psychopathology of eating disorders is subtle and sometimes revealed only after the development of the prolonged illness (Steiner, 1982). Psychological characteristics of eating disorders are numerous but primary areas of psychological dysfunction include a paralyzing sense of ineffectiveness, and an inaccurate perception of internal states involving anxiety, neuroticism, and depression (Bruch, 1973).

Feelings of ineffectiveness have been found to be a central dimension of the eating-disordered personality (Hood, Moore & Garner, 1982). Anorexics feel that they have no will of their own and could not initiate or influence things in any significant way (Selvini, 1974). Harding (1985) found eating-disordered females to be

extremely self-critical. They were driven to be good and anxiously avoided criticism, and discomfort (Bruch, 1980). Personal ineffectiveness, criticism, and negative situations were dealt with through attempts at weight loss (Harding, 1985; Keyes, Brozed, Hanschel, Michelson & Taylor, 1950; Zeller, 1982). To the eating-disordered female, weight loss appears to be the only means available for regaining control over their lives (Zeller, 1982).

In addition to a sense of ineffectiveness, Bruch (1973) found that psychopathology included inaccurate perception of, and difficulty dealing with internal states. Excessive anxiety, neuroticism, depression, and irritability (Frey, 1984; Harding, 1985; Keyes et al., 1950; Garfinkel & Garner, 1982) as well as moodiness, loneliness, shame, and sadness are prevalent emotions (Casper, Offer, & Offer, 1981; Maloney & Farrell, 1980). In a study by Smart, Beaumont, and George (1976), 22 females from 13 to 26 years of age were given the Eyesnck Personality Inventory, the Cattell's 16 Personality Factor Questionnaire, and the Leyton Obsessional Inventory. The results showed that eating-disordered females had intelligence within the normal range, but higher neuroticism and anxiety than "normal" females.

In addition to neuroticism and anxiety, depression, and obsessive perfectionistic traits were studied in 15 normal-weight bulimic women and 15 normal-weight non-eating disordered women from a university in the Washington, D.C. area (Weiss, 1983). The women were matched for age, socioeconomic level, and intelligence (Weiss, 1983). Results showed evidence of pathological depression, obsessional traits, and feelings of inadequacy in daily interactions (Weiss, 1983).

Depression has been found in both anorexics and bulimics (Bemis, 1978; Casper, Eckert, Halmi, Goldberg, Davis, 1980), with the most severe depression being found in anorexics who binge (Bemis, 1978). Bulimics overall have been found to have even greater anxiety, depression, guilt, interpersonal complaints, and maternal obesity than anorexics (Casper et. al, 1980).

Body-esteem and self-esteem. Contributing to the low self-esteem and sense of unworthiness common in anorexia nervosa and bulimia is body-image perception. Body-image distortions appear to be an underlying aspect of much of the eating-disorder psychology (Bruch 1978; Frey, 1984). A person's self-esteem, or self-evaluation has been found to be related to body-esteem (Coopersmith, 1967), which is the physical counterpart to self-esteem and includes the individual's attitudes,

evaluations, and feelings about his/her body (Fisher & Cleveland, 1968). The connection between low self-esteem and body image perceptions has been found to be a vicious cycle, with each contributing to the other (Striegel-Moore, 1986). Eating-disordered females continually compare their appearance to other females, always seeing others as thinner and more physically attractive than themselves (Casper et al., 1979). While specifics of body size overestimation vary, studies (Kalliopuska, 1982; Neuman & Halvorson, 1983; Pierloot & Houben, 1978; Wingate & Christie, 1978) support the existence of perceptual distortions.

Casper (1979) conducted one of the earlier studies of body image distortion and its relationship to eating disorders. Subjects consisted of 79 anorexic females and 130 control subjects between 10 and 18 years of age (Casper, 1979). Using an adaptation of Slade's visual size apparatus, Casper (1979) asked subjects to estimate perceived size of various body parts. While there was some overestimation (i.e. 19% to 27%) in size of face, chest, and waist, major discrepancies (i.e. 24% to 37%) were found in estimation of the body parts below the waist (Casper, 1979). The results showed the tendency for control group members to overestimate body size also, but only the anorexics viewed their emaciated

condition as normal and not an issue for concern (Casper, 1979). The degree of body image disturbance was related to the severity of the eating disorder (Casper, 1979). Overestimation occurred more frequently in subjects who vomited and was found to have a distinct relationship to early relapse (Casper, 1979). In addition, Casper (1979) found a positive correlation between disturbed body image and disturbances in admission of other bodily functions such as hunger.

More recent studies of the disturbance of body-image in anorexics have produced mixed results. Bell, Kirkpatrick, and Rinn (1986) studied possible differences in body-image perception in anorexic, obese, and normal females who were between 11 and 22 years of age. A series of eight silhouettes ranging from emaciated to obese were shown to each subject from the three groups. This procedure allowed assessment of body image distortion based only on visual simulation. Personality dimensions for three of the figures were administered to determine verbal labels associated with the silhouettes (Bell et al., 1986). Subjects' perceptions of self at ideal weight, at plus 10 pounds, at minus 10 pounds, and as expected by family members were assessed. In body size estimation, anorexics tended to overestimate their current body size, with

obese subjects underestimating their body size (Bell et al., 1986). When 10 pounds were added to the estimation, obese and control subjects chose the logical silhouette which was directly above or below their previous choice. The anorexics however tended to skip the adjacent silhouettes selecting the figures two steps higher or lower in weight (Bell et al., 1986). No difference existed in the perception of their ideal body image, or in their perceptions of the body image expected by their families. All subjects, as would be society in general, chose the thin but shapely, muscular silhouette (Bell et al., 1986).

Bell et al. (1986) also analyzed the variation in the view of the personalities associated with the different silhouettes. Personality dimensions studied were happy/sad, active/passive, popular/unpopular, effective/ineffective, competent/incompetent, smart/stupid, and cold/warm. No significant differences were found in the subjects' views of normal and thin figures. The normal silhouette was rated as having the most desirable personality traits, followed first by the thin figure, and then the obese figure. Of the three groups, the obese silhouette was rated most favorably by the obese subjects and least favorably by the anorexics (Bell et al., 1986). The obese figure was rated by the

obese subjects as being warmer than the thin or normal figure (Bell et al., 1986). Anorexics viewed the thin figure as least positive on all eight dimensions, but considered the thin silhouette to be more popular and competent than the obese figure (Bell et al., 1986). Bell et al. (1986) state that this anorexic belief may be a critical factor in the pursuit of thinness.

Interpersonal Problems

Psychological concerns contribute to the difficulties with interpersonal relationships that also are prevalent in anorexic and bulimic females. Problems in interpersonal relationships increase internal anger and self-criticism (Garfinkel & Garner, 1982). Pronounced ambivalence in interpersonal relationships of eating disordered subjects have been found (Casper, Offer, & Ostrow, 1981). Some anorexic and bulimic females have interpersonal relationships which fluctuate between superficial and extremely dependent (Garfinkel & Garner, 1982) while others appear to have normal interpersonal relations (Weiss, 1983). Interpersonal problems manifest themselves as feelings of low self-esteem and unworthiness which prevent development of normal coping skills (Bruch, 1978; Frey, 1984; Harding, 1985).

In summary, eating disorders most frequently have onset during the adolescent and early adult years, but an increasing number of cases are being reported in pre-adolescent females. The families are well established socially and financially, typically middle class or upper middle class. There is a lack of conflict resolution and an absence of expressed anger. Physical symptoms of eating disorders include weight loss, electrolyte dysfunction, hypothalamic dysfunction, erosion of dental enamel, dry skin, hypoglycemia, hair loss, growth of lanugo and fatigue. Behaviorally eating-disordered females exhibit vomiting, rigid eating patterns and excessive exercise. The females are eager to please, perfectionistic and achievement oriented. Psychological symptoms include a sense of ineffectiveness, loss of control, anxiety, depression and guilt. In addition, there is a distorted body-image that is related to low self-esteem.

Eating Disorders in Adolescent and Adult Females

Studies of adolescent and adult females have found multiple factors that explain the higher incidence of eating disorders within these groups. In addition, studies have been done of the specific characteristics prevalent in adolescent and adult onset anorexia and bulimia.

Predisposing Factors

Multiple factors are responsible for the high vulnerability of adolescents and young adult females to eating disorders. Eating disorders in adolescents can be activated by pubertal changes, achievement demands, or an apparently innocuous event or comment (Theander, 1970). In addition, the desperate attempt of maturing adolescent and adult women to fit into the stereotypic feminine role increases vulnerability (Boskind-Lodahl & White, 1976). Historically the stereotypic feminine role has required thinness and a passive, accommodating, helpless approach to life (Boskind-Lodahl & White, 1976). Women have validated themselves and based their self-worth on their ability to please others and control their appearance (Boskind-Lodahl & White, 1976). Excessive concern with pleasing others has been found to be a central dimension in anorexic and/or bulimic women (Muuss, 1986).

Another factor contributing to the high vulnerability of adolescent girls for eating disorders is the desire for personal autonomy (Harding, 1985) and the associated developmental crises (Leinhan & Sanders, 1984). Conflicts in separation from parents, and difficulties dealing with stress have been found in other studies (Harding, 1985; Zeller, 1982). Eating

disorders become a defense for these conflicts through denial of the concerns (Zeller, 1982).

Other factors which can activate eating disorders include pubertal changes (Theander, 1970), perfectionism (Harding, 1985; Muuss, 1986), maturing sexuality (Beaumont, Abraham & Simson, 1981), or an apparently innocuous event or comment (Theander, 1970). Sixty-three percent of patients in one study by Schwabe et al. (1981) began to diet following weight gain or teasing concerning their weight.

Specific family events such as a death sometimes triggered the onset of the eating disorder (Blitzer, Rollins, & Blackwell, 1961; Schwabe et al., 1981). A loss of a parent in the year prior to onset was found in 14% of the cases studied by Schwabe et al. (1981). Steiner (1982) supported this earlier research and stated that the precipitant was often either a casual comment about the girls' weight, a suggestion to diet, or a separation from her family of origin.

Symptoms

Symptoms of anorexia nervosa and bulimia in adolescent and adult females are numerous but can be categorized as psychological symptoms, cognitive disturbances, and behavioral symptoms.

Psychological symptoms. Psychological

characteristics of anorexia and bulimia in adolescents and adults include shyness, nervousness, excessive dependence, depression, and an external locus of control (Hood, Moore, & Garner, 1982; Morgan & Russell, 1975), food fads (Casper et al., 1980; Muuss, 1986), and ego boundary disturbances (Stroeber & Goldenberg, 1986). Morgan and Russell (1975) studied eating disordered patients at Maudsley Hospital who were between 12 and 47 years of age. Thirty-seven percent had marked shyness, nervousness, or excessive dependence on family and 34% had school difficulties that included school phobia, or difficulty in coping with school situations (Morgan & Russell, 1975).

Depression, as well as shyness and nervousness, has been found to be prevalent in both anorexic and bulimic adolescents and adults (Biederman et al., 1986; Muuss, 1986; Stroeber, 1981). Depression has also been found to be the presenting concern for many bulimic adolescent and adult females (Muuss, 1986). Biederman et al. (1986) used the Schedule for Affective Disorders and Schizophrenia - Change Version to distinguish between anorexic females with and without major depressive disorder. Blood samples were used to measure physiological changes. Researchers grouped these

anorexic females into three distinctive subgroups based on the results of the two measures (Biederman et al., 1986). One group contained subjects with onset prior to puberty who had moderate depressive symptoms, a second group was composed of post-pubertal cases with severe depressive symptoms, and the final group held women with post-pubertal onset but who had only mild to moderate depression (Biederman et al., 1986). Of the three groups, all the post-pubertal onset anorexics had more severe depression and the lowest blood levels of adenosine monophosphate and monoamine oxidase activity than the pre-pubertal onset anorexics (Biederman et al., 1986).

Stroeber (1981) studied forty-four adolescent females with either anorexia nervosa or bulimia who were admitted to the children's unit of a psychiatric hospital (Stroeber, 1981). The subjects, ranging from 14 to 17 years of age, were examined on the following measures: (a) Slade Anorectic Behavior Scale; (b) Body Image Making Procedure; (c) Psychiatric Rating Scale for Anorexia Nervosa; (d) Moos Family Environment Scale; and, (e) a family interview (Stroeber, 1981). Results found the bulimics rated higher on premorbid obesity, major depression, alcohol abuse, marital dissatisfaction, anxiety, affective instability,

interpersonal problems, and health problems in parents (Stroeber, 1981).

Another major psychological aspect found in adolescents and young adults relates to locus of control. Hood et al. (1982) studied fifty-four females between 15 and 25 years of age who were admitted to Clarke Institute of Psychiatry with eating disorders. Internal-external control was measured along the three factors of fatalism, social system control, and self-control (Hood et al., 1982). Subjects were given the Beck Depression Scale, the Body Image Survey, the Eating Attitudes Test, the Eysenck Personality Questionnaire, the Sixteen Personality Factor Questionnaire, and the Restraint Scale. Results of Hood et al. (1982) showed that external control increased with age of eating-disordered females. In addition, results showed that externally controlled anorexics were more neurotic and disordered than were internally controlled anorexics.

Both bulimic and anorexic women experience food related fears. Twenty-four percent of the eating disordered subjects studied by Morgan and Russell (1975) had food fads and/or were resistant to eating. Bulimic women, unlike anorexics, have not been found to be controlled by a fear of getting fat (Muuss, 1986).

Instead, bulimics have an overriding fear of being unable to stop eating voluntarily (Muuss, 1986).

In addition to the other psychological aspects of eating disorders, ego boundary disturbances were found by Stroeber and Goldenberg (1981) who studied eating disordered teenagers between 12 and 14 years of age using the Rorschach Inkblot Technique and the Conceptual Boundary scales. Results showed that ego boundary disturbances were a large part of the disorder, and these disturbances remained after initial weight and health were restored.

Cognitive deviations. Eating-disordered adolescents and adults also exhibit cognitive disturbances. A study by Post and Crowther (1985) suggested that the cognitive and attitudinal aspects of bulimia precede the development of behavioral symptoms. Muuss (1986) found that cognitive disturbances of bulimia related to food, weight-loss expectations, eating, and dieting, influenced thinking in other areas (Muuss, 1986). The cognitive disturbances related to food partially resulted from a strict diet; these thoughts were the result of the dichotomous thinking typical of anorexic patients (Garfinkel & Garner, 1982).

Dichotomous thinking, a predominate cognitive pattern in eating disordered females, involves thought

processes which classify all situations, people and/or experiences as either "good" or "bad". The "good" or "bad" classification pattern extends to thoughts involving food and diet. Diet foods are labeled as "good" healthy foods versus "bad" fattening foods, such as bread, potatoes, or sweets (Polivy & Herman, 1985). The use of "good" and "bad" food labels adds to the struggle with food and increases reliance on cognitive controls to restrict food intake (Polivy & Herman, 1985). "Good" and "bad" cognition establishes the belief in the eating disordered woman that she is "in control" if her diet is intact, but "out of control" if even a small diet infraction has occurred. When eating disordered females believe their diets have been violated, a binge results (Polivy & Herman, 1985).

Dieting, binging, and purging behaviors. Binging, purging, and restrictive dieting are related behaviors that are present in both anorexics and bulimics (Polivy & Herman, 1985; Muuss, 1986). The relatedness of anorexia and bulimia can be understood by considering a continuum with anorexia at one end and bulimia at the other (Boskind-Lodahl & White, 1978). The eating disorder may begin as either anorexia or bulimia with each being a distinct eating disorder, or bulimia may

appear as a subgroup in anorexics whose condition has become chronic (Garfinkel & Garner, 1982; Lippe, 1983).

Typically binges consist of high-calorie, easily ingested, and regurgitated foods consumed in large quantities over a short period of time (Harris, 1984). High caloric foods consumed during a binge are generally sweet tasting, can be eaten quickly and vomited easily (Muuss, 1986). During one binge, a bulimic can consume \$70 to \$100 worth on food (Muuss, 1986). The binge is followed by purging through self-induced vomiting or some other means. The binge may then be resumed with the entire episode continuing several hours until the woman is exhausted, and/or interrupted by someone (Harris, 1984). Binging episodes may occur one or more times a day or several times a week (Harris, 1984).

Statistics concerning incidence of bulimia range from 5% to 40% (Muuss, 1986). Schwartz, Thompson, and Johnson (1985) reported that 15% to 20% of college women were or had been bulimic. Halmi, Falk, and Schwartz (1981) found 13% to 67% of a "normal" college students reported binge eating in "normal" nonclinical samples. Harris (1984) described bulimia as possibly the most common eating disorder in adolescents and adults, yet it has been studied less than anorexia.

Binging behavior reinforces abnormally low self-esteem by providing an excuse for remaining isolated, and not assuming day to day responsibilities (Boskind-Lodahl & White, 1978). The binge may follow intense emotional experiences or serve as a coping mechanism for loneliness, anger, depression, or aggression (Muuss, 1986). The antecedent stimuli for the binge is often unrecognized prior to treatment (Polivy & Herman, 1985). An academic failure, vocational failure or interpersonal problem may be the triggering emotional experience (Muuss, 1986). For college students, exam periods mark a drastic increase in bulimic behavior (Muuss, 1986). In addition, real or perceived male rejection may precede a binge (Muuss, 1986).

Bulimia usually starts as a failure to control overwhelming feelings of hunger that result from the restrictive eating of the anorexic (Casper et al., 1980). In a 1978 study by Boskind-Lodahl and White, college women were termed bulimarexic since they alternately fasted and binged/purged. The work by Boskind-Lodahl and White has been supported by Garfinkel, Moldosky, and Garner (1980), Casper et al., (1980), and Loro and Orleans (1981) with findings of 48%, 47%, and 50%, respectively. Polivy and Herman (1985) found that 50% of their patients had regular

binge eating and severe purgation by fasting, vomiting, laxative abuse, and/or diuretic abuse.

Casper et al. (1980) found that over 40% of the patients who were hospitalized with anorexia nervosa, developed bulimia, and nearly 50% of bulimics have been anorexic at one time (Harris, 1984; Mitchell, 1984). Even in bulimic patients without anorexia, dieting of some sort generally preceded the binge (Polivy & Herman, 1985). Muuss (1986) pointed out that great variations exist in the degree of severity of bulimia, with some individuals bingeing and purging only occasionally as compared to obsessive bingeing and purging.

Addictive behaviors: Laxatives, diuretics, and alcohol. Related to the binge-purge behavior are addictive behaviors involving abuse of diet pills, laxatives, diuretics, and alcohol (Post & Crowther, 1985). Three hundred fifty-five college students at the State University of New York were surveyed to determine the prevalence of bulimia on campus (Halmi et al., 1981). The subjects were 14 to 67 years of age, and 59.8% of the sample were women (Halmi et al., 1981). A positive correlation ($r = 0.204$) was found between symptoms of binge-eating and the frequency of diet pill use (Halmi et al., 1981). Laxative abuse had a significant positive relationship ($r = 0.155$) with self-

induced vomiting (Halmi et al., 1981). The presence of laxative abuse along with vomiting indicated a more severe form of bulimia. Muuss (1986) found that 25% to 40% of bulimic women used alcohol, marijuana, amphetamines, or barbiturates. Use of these substances tended to lower self-control and reduce will power, thus exacerbating the binge-purge behavior (Muuss, 1986; Polivy & Herman, 1985).

Exercise behaviors. Abuse of exercise has been found symptomatic of anorexia and bulimia. After finding unusually active physical behavior prior to onset of anorexia nervosa, Kron, Katz, Gorzysnski, and Weiner (1978) concluded that hyperactivity was an early feature of the disorder. This study suggested that extreme exercise may even trigger anorexia nervosa in high-risk persons (Katz, 1986).

A relatively new area of research concerning eating disorders and exercise behaviors concerns male and female athletes (Katz, 1986; Slavin, 1987; Smith, 1980). Early research concerned the food aversions and excessive weight loss in college athletes that simulated anorexia nervosa (Smith, 1980). Katz (1986) found four features of anorexia nervosa described in men prior to their serious interest in long distance running; increased physical activity, restricted food intake,

depression, and episodic binge-eating (Katz, 1986). Recent studies cite compulsive running in males as analogous to anorexia in females (Katz, 1986; Slavin, 1987). Yates, Leehey, and Shisslak (1983) reported that obligatory runners were similar to anorexic females in socioeconomic class and personality. Runners were found to inhibit their anger, deny potentially serious debilities, have extraordinarily high self-expectations, exhibit high tolerance of physical discomfort, and tend toward depression (Yates et al., 1983). Slavin (1987) suggested that obligatory runners and anorexics were attempting to compensate for feelings of inadequacy and striving to become perfect. In addition, compulsive runners have been found to be preoccupied with food and obsessed with a lean body mass, as are anorexics (Slavin, 1987). Additional symptoms of eating disorders in athletes include abnormal social isolation, lack of confidence in their abilities, ritualistic eating behavior such as organizing food on a plate, obsession with counting calories, excessive exercise in an effort to expend calories, bingeing and purging, obsession with weighing themselves, and an overestimation of body size (Slavin, 1987).

Nonaerobic athletes, such as dancers and gymnasts, may also be at high risk for eating disorders (Slavin,

1987). Dancers surveyed by Slavin (1987) listed weight and diet as their two primary concerns. Though lower caloric sports, dancing, and gymnastics require intense training, dedication and maintenance of an the extremely lean body composition (Slavin, 1987). To achieve the required low body fat, dancers and gymnasts have been found to rely on bizarre eating habits and food restrictions that resulted in diets low in key nutrients, iron and calcium (Slavin, 1987).

While eating disorders in athletes do not specifically fit the diagnostic criteria either for anorexia or bulimia, they represent a combination of aspects of both disorders (Slavin, 1987). Before conclusions can be made concerning characteristics, treatment, or outcome for this sub-group of adolescent and young adults, more research must be conducted (Slavin, 1987).

Symptoms of eating disorders in adolescent and adult females can be summarized as follows. Psychologically, eating-disordered females are dependent, depressed, and lack an internal locus of control. In addition, these females have a distorted body image, low self-esteem and difficulties with interpersonal relationships. Cognitive disturbances focus on dieting behaviors, food phobias and dichotomous

thinking. Behavioral symptoms include bingeing, purging, excessive exercise, laxative abuse, diuretic abuse and alcoholism.

Long-range Outcome

Long-range outcome for eating disordered females varies, as do existing outcome statistics. Hsu (1980) and Swift (1982) reported that after five years only 35% of anorexics studied were eating normally and were free of neurotic fixations concerning body weight. Harding (1985) reported lower recovery rates with approximately 15% to 20% of anorexics fully recovering, 60% improving but experiencing relapses when under stressful situations, and 10% dying. Morgan and Russell (1975) found 39% of the anorexics were in the "good" recovery range, 27% were in the intermediate recovery range, 29% were in the poor recovery range, and 5% died. Four years later, 50% of patients in Morgan and Russell's (1975) study had continued avoiding high calorie foods and meat, 40% continued to fear becoming fat, and 30% admitted that they felt fat. Forty-five percent of the patients had difficulties in family relationships (Morgan & Russell, 1975).

Summary

Factors affecting the development of eating disorders in adolescent and adult females include

pubertal changes, achievement demands, desire for personal autonomy, separation issues, and a desperate attempt to fit into the stereotypic feminine role. Cognitive disturbances have been found which are connected with dieting, bingeing and purging behaviors. Addictive behaviors of exercise, laxative, diuretics, and alcohol are also prominent in eating-disordered adults and adolescents. Generally, treatment outcome reports 15% to 20% recovery, 10% death-rate with 70 to 75% remaining in a border-line category.

Eating Disorders in Children

There has been a scarcity of data concerning the eating disorders of anorexia and bulimia in younger and less chronically disturbed subjects (Stroeber, 1980). Since puberty generally triggers the onset of anorexia nervosa, pre-pubertal anorexia may be viewed as a variant of the disorder found in adolescents and adults (Jacobs & Isaacs, 1986). Anorexia nervosa in pre-adolescent females is one of the few eating disturbances which can require extended intervention (Agras, 1974; Siegel, & Rickards, 1978), and remains one of the few psychiatric conditions that kills during latency and early adolescence (Blitzer, Rollins, & Blackwell, 1961). At the present time, bulimia does not appear to occur frequently in early childhood (Striegel-Moore,

Silberstein, & Rodin, 1986). Yet much of the groundwork for developing bulimia has been established during these early years (Striegel-Moore, Silberstein & Rodin, 1986).

Characteristics

Some characteristics have been observed in pre-adolescent females hospitalized with eating disorders. Factors noted have included feeding problems and nutritional deficiencies, age of onset, socialization difficulties, and dysfunctional family interaction patterns.

Nutritional deficiencies. Eating disturbances in children have been a frequent complaint made by parents to their child's pediatricians (Linscheid, 1978). In available literature on children, eating disorders are often linked with feeding problems during infancy and early childhood (Woolston, 1983). Nutritional deficiencies in pre-adolescents and early adolescents can be the result of growth and developmental spurts, poverty, poor food habits, or dietary changes in attempts to influence physical appearance (Alford & Bogle, 1982). Eating disturbances and poor nutrition experienced in early childhood are of concern since deficiencies during this period have a greater impact on growth and development than at any other time in a person's life (Woolston, 1983).

As a result of nutritional deficiencies and/or eating disorders, disproportions in children's height and weight have been found. Humphrey (1979) surveyed height/weight disproportion in 1,953 five to eleven year old students from twelve southeastern United States schools. The findings showed forty percent of the children sampled were either over- or underweight. The older the child, the higher the percentage of disproportion in height and weight, with females showing higher percentages of disproportion than males (Humphrey, 1979).

Age of onset. While age of onset of anorexia nervosa is usually cited as young adult, some researchers have examined patients with onset prior to puberty (Hawley, 1985; Jacobs & Isaacs, 1986; Lesser, 1960; Swift, 1982; Tolstrup, 1982; Warren, 1968). Steinhausen (1983) analyzed forty-five follow-up studies of anorexia nervosa published between 1953 and 1981 and found that onset can occur between 7 and 40 years of age (Steinhausen, 1983). McDaniel (1986) reported that anorexia nervosa has occurred in females as young as ten years of age.

Socialization. As is true for adolescents and adults, possible contributing factors include socialization, family systems, eating habits, and/or

traumatic events. Even in early childhood, females have been socialized to believe that appearance is especially important to them as females, and that they should be concerned with perfecting their looks (Church, 1979; Striegel-Moore, Silberstein & Rodin, 1986). Attitudes and habits concerning size, shape, and eating have formed as a result of culture, family, peer acceptance, and media influence (Church, 1979). In addition, girls have been praised for intellectually irrelevant aspects such as neatness and appearance more often than have boys (Striegel-Moore et al., 1986). Television and children's books have taught pre-adolescent girls the importance of appearance and television has stressed the importance of thinness and youth (Striegel-Moore et al., 1986). Developmental studies have shown that even very young girls readily internalize the societal messages of the importance of attractiveness (Bruch, 1980; Striegel-Moore et al., 1986).

As with adults, studies of pre-pubertal and post-pubertal anorexics have found higher incidence of eating disorders in females than in males (Jacobs and Isaacs, 1986). The percentage of male anorexics compared to the percentages of female anorexics has been found to be more similar prior to puberty than after puberty (Jacobs & Isaacs, 1986). The higher incidence of anorexia in

males prior to puberty corresponds to a similar finding concerning depression in male and female children (Rutter & Garmezy, 1983).

Family interaction patterns. Parents of eating-disordered pre-adolescent females are generally older than the average age for parents. As is true for adolescent anorexics and bulimics, homes of pre-adolescent eating-disordered females often consist of only female siblings. In addition, these homes are well-established, well-functioning, and "set-in-their ways" with a predominate concept of high achievement (Bruch, 1980). The effect that family size and birth order rank has on the development of anorexia in children is unclear (Jacobs & Isaacs, 1986).

Family disturbances in parent-child interactions have been noted (Bruch, 1980; Jacobs & Isaacs, 1986). Bruch (1980) found that child care was done according to the mother's decision and not as a response to clues from the child (Botella, 1978). Non-investment of the mother for the child was found by Botella (1978) in a case study of a six year old anorexic female. The mother responded to the child in a mechanical way, creating a pathological relationship between mother and child. Jacobs and Isaacs (1986) found similar

disturbances in the relationship between the father and the anorexic child.

Dysfunctional family patterns can be traced back to the anorexic child's grandparents. Mothers of anorexic females have been found to have strong dependency needs for their own mothers and as a result experience much guilt and hostility (Blitzer et al., 1961). Evidence has also been found of open conflict between mothers and grandmothers during the child's infancy (Blitzer et al., 1961).

Symptoms

Since fewer studies exist on pre-adolescent females with eating disorders, documented symptoms are sketchy. Much of the research has compared case studies of hospitalized children with diagnosed cases of anorexia and bulimia in adolescent and adult females.

Physical symptoms. Part of the problem in studying anorexia and bulimia in young females is the absence of a workable diagnostic definition of symptoms. Unfortunately, so little is known about eating disorders of this age group that initially a phenomenological, rather than an etiological classification is needed for anorexia and bulimia (Woolston, 1982). At this young age, eating disorders may appear without the full spectrum of symptomatology seen in adolescent and adult

females (McDaniel, 1986). Irvin (1981) studied young anorexic females between nine and twelve years of age. As a result, he concluded that the Diagnostic and Statistical Manual - III's (DSM-III) criterion for anorexia nervosa might not be appropriate for children. Two specific areas are in question. The DSM-III weight loss criteria fails to take into account the lower amount of excess adipose tissue and/or frequent fluid-intake restriction in pre-adolescent females, and therefore this aspect possibly should be included (Irvin, 1981).

Physical symptoms in children have been reported by Schmidt and Duncan (1974), who studied anorexic children between 11 and 13 years of age who were admitted to the Clinical Research Center of the Children's Memorial Hospital in Chicago. These children exhibited symptoms which included low temperature, low pulse, low respiratory rate, low blood pressure, and low metabolic rate (Schmidt & Duncan, 1974). The females experienced poor muscle tone, constipation, dry skin, downy body hair, flat affect, and little or no subcutaneous fat (Schmidt & Duncan, 1974). An 11 year old anorexic female described herself as having a tight feeling in her stomach, being "sick in my stomach," and having butterflies in her stomach (Fundudis, 1974).

Behavioral symptoms. Presenting problems of pre-adolescent anorexics have been found to include resistance to eating (Fundudis, 1986), excessive exercise (Blitzer et al., 1961; Fundudis, 1986) and self-destructive behaviors. Greater behavioral difficulties have been found in pre-pubertal onset anorexics than in post-pubertal anorexics (Jacobs & Isaacs, 1986). Prior to the onset of anorexia, children have been perfectly obedient to their parents (Bruch, 1980). Hospitalized children have been found to know the adverse effects of their extreme physical behaviors on their health, yet were unconcerned (Blitzer et al., 1961). This self-destructive wish has been found to be a determinant of eating disordered behavior (Blitzer et al., 1961). Both pre-pubertal and post-pubertal anorexics have a high incidence of self-injurious acts or suicide attempts (Jacobs & Isaacs, 1986).

In addition to self-destructive behavior, regressive behavior has often been exhibited by eating disordered children. Regressive behavior rather than starvation has frequently been the cause for hospitalization of the anorexic children (Blitzer et al., 1961). While regressive behavior has been known to be typical in children with psychiatric disorders,

regression in anorexic children has been found to be more pronounced (Blitzer et al., 1961).

Psychological symptoms. Significant pre-morbid pathology has been found in eating disordered children (Jacobs & Isaacs, 1986). One of the early studies, conducted by Blitzer et al. (1961) found that twelve girls and three boys between seven and twelve years of age had lost at least 20% of their original weight and had received psychiatric treatment within six months of the onset of anorexia. The starved children denied their emaciation as do adult anorexics. Failure to eat had resulted from a fear of food with the children experiencing preconscious and conscious fantasies related to food and eating.

Depression, which is recognized as an important psychological aspect of anorexia nervosa in adolescent and adult females, is present in eating-disordered children (Blitzer et al., 1961), but differs from classic clinical depression. With these children, the manifestations of depression have been found to be generally indirect, with little verbal expression of self-deprecating ideas or feelings, and withdrawal from other people or outside activities (Blitzer et al., 1961). In addition depressed children had sad faces, were reluctant to face the future, and had difficulty

expressing strong affect. Depression in the child was related to the needs of the parents and was an attempt to protect the family as a whole.

Additional research on psychological symptoms in pre-adolescent anorexics has been undertaken by comparing anorexics, neurotics, and nonanorexic controls. The anorexic children have been found to be more obsessional, more approval seeking, and more rigid than the neurotic and nonanorexic subjects (Stroeber, 1980). Eating-disordered pre-adolescent females exhibited a higher maintenance of external control while experiencing a deep-seated fear of loss of inner control (Steiner, 1980; Stroeber, 1980). Pre-pubertal anorexics, as compared to neurotics and normal controls, have been found to have difficulties in peer relationships and higher levels of overt sexual anxiety (Jacobs & Isaacs, 1986). As the children grew older their anxieties shifted to fears of puberty (Jacobs & Isaacs, 1986). Neither the anorexic children nor the neurotic children exhibited the once held belief of a fear of oral impregnation (Jacobs & Isaacs, 1986).

Body-esteem and self-esteem disturbances. The relationship between weight, self-esteem and body-esteem for older adolescents and adults has been examined, but only a few studies have included females under 13 years

of age. Striegel-Moore et al. (1986) found that girls referred more to the views of other people in their self-depictions than did boys. Body build was correlated with self-esteem for girls but not for boys, with weight being a critical factor in the relationship between body image and self-esteem. Mendelson and White (1982) studied thirty-six male and female school children between seven and half and twelve years of age who had a wide range of weights. Their findings showed positive correlations of body-esteem and self-esteem in children. These results parallel studies on adolescents and adults with eating disorders.

Mendelson and White (1985) later extended their earlier study by exploring the self-esteem and body-esteem relationship in a larger sample from a wider age range. Ninety-seven children were placed in one of three age groups (8.5 to 11.4 years, 11.5 to 14.4 years or 14.5 to 17.4 years). Half of the children were overweight and half were of normal weight. All subjects were administered Coppersmith's Self-Esteem Scale and the Body-Esteem Scale. Generally, those children who disliked their body/appearance also disliked other aspects of their lives including school, their behavior, and/or their home situations (Mendelson & White, 1985). Findings for the youngest group showed similar measures

of self-esteem between the overweight and the normal weight children. Poor self-esteem and body-esteem coexisted with good self-esteem in the youngest group. For children 11 to 14 years of age, self-esteem was adversely affected in overweight males. Overweight females were not adversely affected until they were in the older group; i.e., 14.5 to 17.4 years of age. At all ages, overweight children had lower body-esteem than did normal weight children, with those having low self-esteem also having low body-esteem. Body-esteem was found to predict self-esteem in only the two older groups of children. This finding indicates that self-esteem in young, overweight children had not yet deteriorated as was the case in the two older groups.

Academic Disturbances

As with adolescents and adults, conceptual deviations exist for eating disordered children. The profound weight loss can result in active congestive impairment, including confusion, memory deficits, lack of ability to abstract, loss of orientation, reduction of level of consciousness, and/or decreased attention span (Steiner, 1982). The cognitive deviations center on the child's continuing use of moralistic, child-like thinking rather than moving on to formal operations and abstract thought (Bruch, 1980). Cognitive disturbances

in eating disordered children have not been found to affect academic achievement which remains high (Bruch, 1980). Limited attention span and the fatigue which result from poor nutrition can reduce academic performance. However, the eating-disordered student's concentration on perfection and academic achievement may counter-act adverse effects of the disorder.

School achievement, school ability, and absenteeism were among the independent variables examined in connection with disordered eating attitudes in school children. A pilot study done by the researcher in April 1987 used the Adapted Eating Attitudes Test (Vacc & Rhyne, 1987), an alternate language form of the Eating Attitudes Test, to indicate pre-adolescent females with distorted eating attitudes and behaviors. The relationship of elevated scores on an Adapted Eating Attitudes Test (AEAT) and the independent variables of achievement, cognitive skills, absenteeism, overt behavior, birth order, and family income were examined. Correlations between the AEAT and each independent variable were low, but indicated that, of these variables, absenteeism and cognitive skills were the best predictors of elevated AEAT scores and subsequent distorted eating attitudes.

Long-range Outcome

Opinions vary regarding long-range outcome in pre-adolescent anorexic subjects (Hawley, 1985). Hawley (1985) studied the long-term outcome of anorexic children who met the diagnostic criteria of the DSM-III and were 13 years of age or younger. Subjects were rated on body weight and menstrual function over the six months previous to the study. Results showed duration of the eating disorder ranged from 0.1 to 2.0 years with a mean age of 0.7 years. At follow-up there had been no deaths. Outcome was classified as "good" (i.e., maintained body weight within 15% of a normal weight), "intermediate" (i.e., weight had only intermittently risen to within 15% of normal), and "poor" (weight lies outside the 15% limit and menses are absent). The nutritional outcome was good in 67% of the cases in Hawley's study (1985), but only 56% of the subjects had normalized dietary patterns. Sixty of the subjects reported regular menstruation. Thirteen of the 21 identified cases were appropriately placed in employment or further education. Psychoeducational outcome was poorer with four subjects remaining fearful of sexual relationships, and/or completely avoided them. Five other subjects reported confusion and uncertainty regarding sexual relationships (Hawley, 1985). The

overall measure of psychological outcome rated 50% in the "good" category, 33% in the "intermediate" group, and 17% placed in the "poor" category (Hawley, 1985).

Summary

In summary, eating disorders are long-term, devastating illnesses which affect not only the individual, but also the entire family. They are resistant to treatment and often have been difficult to diagnose during the early stages. Even after initial weight loss has been restored, many of the underlying psychological and physical concerns persist. Extensive literature exists describing the characteristics and symptoms of anorexia nervosa and bulimia in adolescent and adult females, yet little is known about pre-adolescent onset. Characteristics which are known include nutritional deficiencies, socialization in the stereotypic female role, enmeshed families, complaints of "a sick feeling in my stomach", perfect behavior prior to onset, following onset self-destructive and regressive behaviors, and body-esteem/self-esteem difficulties. Research is needed examining the changes in eating disordered attitudes in young females, and the identification of variables associated with pre-pubertal onset.

Assessment of Eating Disorders

There have been several attempts to develop methods of assessing eating-disordered symptoms (Cooper, Cooper, & Fairburn, 1985). Several of the resulting assessment instruments are reviewed; a) BINGE Scale, b) Eating Disorder Inventory (EDI), c) Eating Attitudes Test (EAT), and d) Adapted Eating Attitudes Test (AEAT).

The BINGE Scale

The BINGE (BS) scale is an instrument designed to provide descriptive, quantifiable information about the behavioral and attitudinal parameters of bulimia. The instrument is a self-report measure focusing on the amount of food ingested in a binge episode, duration of the binge, perception of lack of control, depression, low self-esteem, and a negative body image (Hawkins & Clement, 1980).

Preliminary construct validity of the BINGE Scale was conducted by Hawkins and Clement (1980) using two samples of college undergraduates with varying body weights. The sample was composed of 73 females and 45 males with weight categories based on the "desirable" weights for medium frame men and women as reported by the Metropolitan Life Insurance Company, 1959 (Hawkins & Clement, 1980). In addition, 26 overweight college females participated in the study.

Hawkins and Clement (1980) found the internal consistency satisfactory for a pilot study (Cronbach's $\alpha = 0.68$). One month test-retest reliability of the total scores was 0.88. A factor analysis showed 71% of the variance in item loading was accounted for by a factor representing "guilt" or "concern" (Hawkins & Clement, 1980). An additional 16% of the variance being accounted for by items measuring duration and satiety feelings connected with the binge.

An analysis of variance using sex, weight percentage, and age of onset of weight concern found that females had significantly higher scores on the BINGE than males, ($F = 6.16$, $p < 0.001$). In addition, binge tendencies were more severe for overweight subjects than for normal weight subjects ($F = 5.94$, $p < 0.01$), and subjects with onset prior to 12 years of age received higher scores on the BINGE ($F = 6.16$, $p < 0.01$) (Hawkins & Clement, 1980).

The Eating Disorder Inventory

The Eating Disorder Inventory (EDI) is a 64-item instrument measuring some of the behavioral and psychological traits common to anorexia nervosa and bulimia (Eberly & Eberly, 1985). The purpose in developing the EDI was to provide an instrument suitable for assessing the cognitive and behavioral dimensions

which differentiate between subjects with eating disorders and subjects who are only "strict" dieters (Cooper, Cooper, & Fairburn, 1985). The EDI consists of three subscales measuring behaviors and symptoms of anorexia and bulimia that include a) drive for thinness, b) bulimia, and c) body dissatisfaction. Five subscales measure the related psychological factors of ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness, and maturity fears (Eberly & Eberly, 1985).

Respectable internal consistency for each subscale as well as the total instrument have been reported but no coefficients were stated (Eberly & Eberly, 1985; Cooper, Cooper, & Fairburn, 1985). Questions concerning the concurrent and predictive validity of the EDI have been raised citing a need for additional studies (Eberly & Eberly, 1985).

Cooper, Cooper, and Fairburn (1985), studied the correlation between scores on the EDI, the Eating Attitudes Test (EAT) and the 28-Item General Health Questionnaire (GHQ). Results support the claim that the EDI measures psychopathological features other than concern for weight, shape, and dieting. However, results concerning whether or not the EDI measures psychopathological characteristics specific to patients

with eating disorders were inconclusive (Copper et al., 1985).

The Eating Attitudes Test (EAT)

One of the primary instruments for assessing anorexia and bulimia is the Eating Attitudes Test (EAT)-40 by Garner and Garfinkel (1979, 1980, 1982). The EAT-40, which is an objective, self-report instrument that assesses the symptoms of anorexia nervosa and bulimia, has been used to measure abnormal eating patterns and to detect previously undiagnosed cases of anorexia nervosa in high risk populations over the age of 15 years (Garner & Garfinkel, 1980). Scores from use of this instrument have been found to be independent of weight but related to emotional disturbance (Garner et al., 1982).

The EAT-40 was developed in 1979 by David Garner and Paul Garfinkel. After surveying the clinical literature, an initial 35 item instrument reflecting reported "anorexic" behaviors was developed (Garner & Garfinkel, 1979). The initial version was administered to 32 anorexic patients. Twenty-three items showed moderate concurrent validity with test scores being good predictors of current clinical diagnosis of anorexia nervosa (Garner & Garfinkel, 1979).

Cross-validation to determine the test's predictive validity was done using an independent sample of 33 anorexics and 59 normal control subjects (Garner & Garfinkel, 1979). A validity coefficient for the new sample was found by correlating the total score on the initial version of the EAT with the criterion group membership ($r = 0.85, p < 0.001$). When all 40 items of the revised version were included, the validity coefficient was 0.87 ($p < 0.001$), indicating good predictive validity for anorexic group membership (Garner & Garfinkel, 1979). Individual test items were examined for the degree that each could validly predict group membership. Item score was correlated with group membership showing the biserial correlation for 37 of the items to be significant at the 0.001 level of confidence (Garner & Garfinkel, 1979). One of the 40 items had a lower yet significant coefficient ($p < 0.01$). The remaining two items with moderate coefficients were retained since they were clinically relevant (Garner & Garfinkel, 1979).

The final version of the EAT-40 was administered to a group of 49 males and a group of 16 obese individuals (Garner & Garfinkel, 1979). Significant group differences were found ($F = 190.04, p < 0.001$). A small degree of overlap in the EAT scores of the anorexic and

control groups was found (Garner & Garfinkel, 1979). For this sample, a cut-off score of 30 on the EAT would eliminate false negatives for the anorexic group (Garner & Garfinkel, 1979). Thirteen percent of the normal subjects with eating concerns comparable to the anorexics subjects in this sample were identified (Garner & Garfinkel, 1979).

A factor analysis of the EAT-40 revealed that items could be grouped on seven factors: (a) food preoccupation, (b) body image for thinness, (c) vomiting and laxative abuse, (d) dieting, (e) slow eating, (f) clandestine eating, and (g) perceived social pressure to gain weight (Garner & Garfinkel, 1979). Although the sample size was small, results provided tentative support for content validity for several symptom areas (Garner & Garfinkel, 1979).

Using the normal control group, the EAT was correlated with several other measures to establish discriminant validity (Herman & Polivy, 1975). Measures selected were the Restraint Scale and the Eysenck Personality Inventory (Herman & Polivy, 1975). Results indicated that the EAT did not simply reflect difficulties in controlling weight, nor did it only measure extraversion and neuroticism of the Eysenck Personality Inventory (Garner & Garfinkel, 1979). Based

on the above, Garner and Garfinkel (1979) concluded that the EAT-40 measured different constructs from the Restraint Scale or the Eysenck Personality Inventory.

Internal reliability of the EAT-40 was determined using the alpha reliability coefficient (Garner & Garfinkel, 1979). The alpha coefficients were 0.79 and 0.94 for the anorexic group and the combined groups, respectively (Garner & Garfinkel, 1979). Results demonstrated a strong degree of internal reliability, especially considering the relatively small number of test items.

The original EAT containing 40 items has been shortened to the newer EAT-26. The EAT-26, as does the EAT-40, has established reliability and validity for subjects 15 years old or older (Garner & Garfinkel, 1979; Garner & Garfinkel, 1980; Garner & Garfinkel, 1982). A factor analysis on the EAT-26 indicated that the abbreviated form provided a multi-factorial 26-item scale which correlated highly with the original scale ($r = 0.98$) (Garner et al., 1982). It was concluded that the 14 items eliminated were redundant and did not increase predictive validity of the EAT (Garner et al., 1982). The remaining 26 test items load on three factors. Factor I focuses on overestimation of body size, and dissatisfaction with body shape, with the

subject wishing to be smaller. The focus of Factor II is on bulimia and food preoccupation, with Factor III, like Factor I, being associated with lower body weight, and attitudes of self-control over food.

Cronbach's alpha was used by Garner et al. (1982) to establish reliability coefficients for both an anorexic and a normal control group on the different factors as well as on the total instrument. A cut-off score of 20 on the EAT-26, as compared to the cut score of 30 on the EAT-40, was found to classify a similar proportion of anorexics and control subjects (Garner et al., 1982). The reliability coefficients for the anorexic group on Factors I, II, and III were 0.90, 0.84, and 0.83, respectively. For the normal control group, reliability coefficients were 0.86, 0.61, and 0.46 for Factors I, II, and III, respectively (Garner et al., 1982). Total instrument reliability for the EAT-26 is 0.98 for anorexics, and 0.83 for the female comparison group (Garner et al., 1982). The above reliabilities can be compared to the reliability coefficients on the EAT-40 of 0.92 for the anorexic group and 0.83 for the normal control group.

Validity studies show the EAT-26 has a cut-off point of 20/21 and a positive predictive value of fifty-three percent (Garner et al., 1982). The EAT-26 has

been found valid for identifying anorexic patients as well as for identifying eating disturbances in non-clinical samples (Button & Whitehouse, 1981; Garner & Garfinkel, 1980; Thompson & Schwartz, 1982). Most individuals from non-clinical samples who score high on the EAT-26 did not exhibit the diagnostic criteria for anorexia nervosa (Garner et al., 1982). However, during individual interviews with these subjects, abnormal eating patterns that interfered with normal psychosocial functioning were found (Button & Whitehouse, 1981; Garner & Garfinkel, 1979, 1980). Therefore, research using the EAT-26 with non-clinical samples must be interpreted tentatively (Button & Whitehouse, 1981). The EAT may indeed indicate the presence of symptoms common to anorexia nervosa, but it is possibly unfounded to assume high scores on the EAT automatically diagnoses anorexia nervosa in non-clinical samples (Button & Whitehouse, 1981; Garner & Garfinkel, 1980). Finally, the EAT-26 does not reveal the motivation or possible psychopathology underlying the eating disorder behavior (Garner et al., 1982). The EAT may be most useful in screening non-clinical samples, such as school children (Garner et al., 1982). In several studies the EAT was found helpful to school counselors in identifying eating problems with junior high and senior high school

students (Frey, 1984; Mann, Wakeling, Wood, Monck, Dobbs, & Szmuckler, 1983).

The Adapted Eating Attitudes Test (AEAT)

The previously discussed eating-disorder assessment instruments are suitable for adolescents and adults but not for pre-adolescent individuals. Since the EAT has been shown to provide a reliable and valid index of the symptoms of eating disorders, it was used as the basis for an alternate language form appropriate for children (Vacc & Rhyne, 1987).

The original language of the EAT-26 was altered to produce a screening instrument with a third-grade reading level (Vacc & Rhyne, 1987). Readability of the instrument, calculated using the Dale and Chall (1948) formula was set at third grade level. The revised instrument and the original form of the EAT-26 were administered to 29 female graduate students (Vacc & Rhyne, 1987). Results showed that the AEAT correlated moderately with the original instrument (EAT-26) ($r = 0.75$), thus supporting its use in future studies for the purpose of learning more about eating disorder symptoms in children (Vacc & Rhyne, 1987). Following a pilot study one item was divided into two to eliminate confusion for the students.

Summary

Since the literature concerning prediction of eating disorders in pre-adolescent females is unclear, variables associated with adult and older adolescents must be relied upon to provide a basis for exploratory research. The families of eating-disordered adolescent and adult females are predominately white, well-established, well-functioning, and socially and financially secure. Adolescent eating-disordered females have small families with two or three siblings, and enmeshed interaction patterns. In pre-adolescent females, the patterns are the same, but research is unclear as to family size. Behaviorally, eating-disordered females are model children, dependable, eager to please, and extroverted. These achievement-oriented females are perfectionists, over-achievers, and people-pleasers. At a clinical stage, eating-disordered females are anxious, depressed, moody, and sad. They deny their emaciation and experience a sense of ineffectiveness. In children, the depression differs from classic depression, manifested indirectly with little verbal expression of self-deprecating ideas.

The relationship of body-image to eating disorders for adolescents and adults is known. However, in children the relationship of body-image is unclear.

Research has shown that body-build and self-esteem are correlated for girls, with weight being the critical factor in the relationship between body-image and self-esteem. Finally, it has been shown that dieting behaviors and a history of past dieting are present in children, adolescents, and adults with eating disorders.

Based on the previous literature review, variables of interest for further study of eating disorders in females include achievement, school ability, absenteeism, family income, family size, race, dieting history, weight satisfaction, body-image, and anxiety.

CHAPTER III

METHODOLOGY

Current assumptions regarding eating disorders have been based on research concerning adolescent and adult females. Eating disorders are serious illnesses that can result in a lifetime of struggle, expense, treatment, and even death. Early detection is critical for a successful treatment outcome. Since onset of eating disorders is occurring at younger ages, there is a need for research dealing with pre-adolescent females. The literature review supported the need for knowledge of the changes in eating attitudes in pre-adolescent females, as well as knowledge of variables related to eating disorders in pre-adolescent females.

Research Question

This study examines whether a difference exists in the eating attitudes of fourth-, sixth-, and eighth-grade females. Also to be examined is the amount of variance in the Adapted Eating Attitudes Test scores that is accounted for by achievement scores, school ability, absenteeism, family income, family size, race, overt behavior, past diet history, weight satisfaction, body-esteem, and school anxiety. The hypotheses to

be examined are as follows:

1. There is a difference in eating attitudes in fourth-, sixth-, and eighth-grade females as measured by raw scores on the Adapted Eating Attitudes Test.
2. Achievement, school ability, absenteeism, family income level, number of siblings, race, height/weight ratio, diet history, weight satisfaction, looks satisfaction, and perception of school anxiety can be used to account for the variance in Adapted Eating Attitudes Test scores.

Subjects

Three hundred females in grades four, six, and eight selected from a public school system composed the sample. The school system has both city and county school children from a variety of family environments. The minimum sample size consisted of 100 females from each grade.

In the county system surveyed, the eighth-grades were contained in three consolidated junior high schools, one located in each end of the county and one in the city. One junior high school has students from predominantly rural farm families, one has students from both high-level professional families as well as impoverished homes, and the third junior high school has

students from the city. Since the eighth-grades had already been clustered based on where the students live, all three junior high schools were surveyed for this study. The fourth- and sixth-grades are housed in eight neighborhood schools, each containing a variety of students. Therefore, schools were randomly sampled for the fourth- and the sixth-grades. The subjects in grades four, six, and eight ranged in age from nine to fifteen years of age depending on previous grade retentions.

Instruments

The following instruments were used to measure dependent and independent variables (a) the Adapted Eating Attitudes Test (AEAT), (b) the California Achievement Test (CAT), (c) The Otis-Lennon School Ability Test (O-LSAT), (d) a questionnaire, and (e) the school cumulative records.

Adapted Eating Attitudes Test (AEAT). In order to assess children who range from 9 to 15 years of age, an instrument with age appropriate language and questions (i.e., AEAT) was developed (Vacc & Rhyne, 1987). The AEAT is a modification of the Eating Attitudes Test-26, which is a widely used and accepted instrument for assessing eating disorders in adolescents and adults (Garner & Garfinkel, 1979; 1980; 1982). The AEAT, which

appears in Appendix A, contains 27 items. Questions were printed in large print and responses utilized pictograms of shaded sections of a "pie" to represent the Likert scale categories.

Readability for the AEAT was calculated using the Dale-Chall formula for predicting readability which was developed by Edgar Dale and Jeanne S. Chall (1948). The formula is based on two counts; the average sentence length and the percentage of "unfamiliar words" (i.e., those words outside of the 3000 words contained in the Dale-Chall list). Readability of the AEAT was determined to be at the third-grade reading level.

A study was conducted during the summer of 1986 to determine the comparability of scores on the EAT-26 and the AEAT. The original and the adapted forms of the EAT-26 were administered on succeeding days to 48 adult female subjects. The Pearson Product Moment Correlation coefficient between the scores on the two forms of the instrument was 0.75 ($p > 0.05$). Mean scores for the EAT and the AEAT were 8.88 (SD = 6.28) and 11.23 (SD = 7.11), respectively. The study showed that these two forms yielded comparable results.

To determine the internal consistency of the AEAT when used with children, a Cronbach alpha reliability coefficient was calculated. A random sample of 100 of

the subjects participating in the study was selected. A satisfactory reliability coefficient of 0.67 was obtained.

California Achievement Test (CAT). The California Achievement Test (CAT) (Salvia & Ysseldyke, 1985) is a norm- and criterion-referenced achievement test measuring reading, mathematics, and language skills. There are two forms of the test (i.e., CAT C and CAT D), with levels 10 through 19 overlapping in the CAT C, and levels 13 through 19 overlapping in form D (Salvia & Ysseldyke, 1985). The overlapping is deliberate allowing for a continuous score scale across the grades (Buros, 1978). Scores from levels 13 and 16, were included in this study. Level 13 covers grades 2.9 through 3.6 and level 16 covers grades 5.6 through 6.9 (Salvia & Ysseldyke, 1985).

Scale scores were produced from a single, equal-interval scale of scores across all grades for use with all levels and forms of the CAT. The scale score is a three-digit number ranging from approximately 100 to 900, with a mean of 600 and a standard deviation of 100 at grade 10 (Tiegs & Clark, 1970). This equal interval scale gives the range of performance from grade 1.5 to grade 12. Scale scores have advantages over other types of scores since scale scores have interval scaling, a

normal distribution, and independence of form, level, grade, time of year, and restandardization (Tiegs & Clark, 1970). Scores can be added, subtracted, and averaged regardless of the level or form of the CAT administered. Direct comparisons among grades are possible because scores on different levels of the CAT are related to a single scale, rather than to a scale which is specific to a particular grade and semester (Tiegs & Clark, 1970).

Three kinds of reliability data are reported for the CAT; internal consistency, test-retest data, and criterion-referenced data. Internal-consistency coefficients for sub-tests range from 0.59 to 0.95, with the majority of coefficients between 0.75 and 0.90 (Salvia & Ysseldyke, 1985). Total scores for different batteries, such as reading or mathematics, have internal-consistency coefficients over 0.85. Test-retest reliability for forms C and D of the CAT were reported over six months (Salvia & Ysseldyke, 1985). Individual sub-tests reliability coefficients ranged from 0.23 to 0.81, with most between 0.60 and 0.70. Total scores reliability coefficients ranged from 0.52 to 0.94 (Salvia & Ysseldyke, 1985). The test authors have reported reliability coefficients for derived objective mastery scores as they pertain to category

objectives (Salvia & Ysseldyke, 1985). Reliabilities for mastery scores ranged from 0.36 to 0.87, with the majority of coefficients being greater than 0.70 (Salvia & Ysseldyke, 1985). Content validity of the CAT is appropriate for national samples, but local content validity must be judged based on the particular class, school, or district (Buros, 1978; Salvia & Ysseldyke, 1985).

Otis-Lennon School Ability Test. The Otis-Lennon School Ability Test (O-LSAT); was designed to provide an accurate and efficient measure of those abilities required to achieve the desirable cognitive results of formal education (Otis & Lennon, 1979). The term school ability, or scholastic aptitude, applies to the complex set of abilities needed to succeed in educational endeavors (Otis & Lennon, 1979). O-LSAT assesses the verbal-educational factor of general intellectual ability through tasks that call for the application of various processes to verbal, quantitative and pictorial content (Otis & Lennon, 1979). A strong relationship has been found between scores on this measure and measures of scholastic achievement. Two parallel forms of the O-LSAT, Form R and Form S, were developed for each level. Test items on the two forms are balanced in

content, difficulty, and discriminatory ability and yield comparable results (Otis & Lennon, 1979).

The series has five levels that range from grades 1 through 12, with each level designed to yield a reliable and efficient measurement for most students at the intended grade level (Otis-Lennon, 1979). The five levels include Primary I (Grade 1), Primary II (Grades 2 and 3), Elementary (Grades 4 and 5), Intermediate (Grades 6 through 8), and Advanced (Grades 9 through 12).

Responses to individual items are combined to yield a single raw score which is translated into a derived score conveying information concerning level of pupil performance (Otis & Lennon, 1979). The derived scores were developed using national norms established through testing of carefully specified stratified probability-samples of various students within the schools.

Normative data for the O-LSAT was based on pupil performance for both age and grade level with data for performance by age yielding a school ability index (SAI), percentile rank, and stanine for each student. Norms for performance by grade yield percentile ranks, stanines, and achievement ranges (Otis & Lennon, 1979).

The SAI is a normalized standard score with a mean of 100 and a standard deviation of 16 points, and is an

index of the pupil's relative ability in comparison with pupils of a similar chronological age. The SAI which was developed as a deviation IQ score is a three-digit number ranging from 50 to 150, that has the statistical properties of an intelligence quotient (Otis & Lennon, 1979). Approximately 2% of pupils will obtain SAIs above 132, 14% will obtain SAIs between 116 and 132, 68% of pupils will obtain SAIs between 84 and 116, 14% will obtain SAIs between 68 and 84, and 2% will obtain SAIs below 68. SAI scores are obtained by locating raw scores in the SAI table of the Manual for Administering and Interpreting the Otis-Lennon School Ability Test.

Since SAI norms were developed from a system of interbattery scaled scores, it is possible to convert raw scores on any level of the test to a single score scale with specific statistical properties (Otis & Lennon, 1979). Scores of all pupils regardless of age, grade, or level are able to be combined into a single distribution with each distribution of scaled scores by age transformed into the SAI scores having the same mean and standard deviation for all age groups.

Reliability coefficients for the O-LSAT were obtained on the basis of the Kuder-Richardson-20 (KR-20) and test-retest procedures. The Kuder-Richardson-20 coefficients were: (a) Primary II, KR-20 = 0.92, SE=3.8

(Otis & Lennon, 1979a); (b) Elementary, KR-20 = 0.94, SE = 3.6 (Otis & Lennon, 1979a); and, (c) Intermediate, KR-20 = 0.93, SE = 4.2 (Otis & Lennon, 1979b).

The following test-retest reliability coefficients were obtained from students grades 1, 2, 4, 7, and 10 in four school systems who were tested in October 1977 and six months later in April 1978. Fall-Spring test-retest reliability coefficients were: (a) Primary II, $r = 0.84$ (Otis & Lennon, 1979a); (b) Elementary, $r = 0.86$ (Otis & Lennon, 1979a); and, (c) Intermediate, $r = 0.92$ (Otis & Lennon, 1979b).

Correlations between the Otis-Lennon scores and teacher grades for elementary and high school students ranged from 0.40 to 0.60, with a median correlation of 0.49 (Otis & Lennon, 1979). The O-LSAT has also been found to be correlated with Metropolitan Achievement Test scores (Otis & Lennon, 1979).

Questionnaire. Children completed a brief questionnaire which appears in Appendix B. Included is a question on diet history, satisfaction with body weight, body-esteem, and school anxiety. The items are forced-choice questions (i.e., Yes or No), with an answer of "yes" being coded as "1", and an answer of "no" being coded as a "0". The answer to each question was recorded as a separate independent variable.

Results yielded one score for each of the following:

- (a) dieting history, (b) body weight satisfaction,
- (c) body-esteem, and (d) perception of school anxiety.

Teacher report. Due to the absence of an appropriate behavior rating scale, teachers were asked to note any students they believed to have an eating disorder or any outstanding behavioral/social/emotional characteristics. Teacher participation was voluntary. Behavior notes for students with scores above the mean on the AEAT were reported in an anecdotal format.

School records. According to state law, cumulative folders are held on each child in the North Carolina public schools. Information on each student was recorded yearly by teachers or staff personnel. Demographic information shown in Appendix C will include age in months, total days absent in 1986-1987, total number of children in the family including adopted and step-siblings, CAT scores, school ability index scores (IQ), race, family income, height in inches, and weight in pounds. Race was recorded as a zero (0) for non-white children and a one (1) for white children. Family income level was determined based on qualification for participation in the subsidized school lunch program which is based on reported family income and the number of reported dependents in the family. Participation in

the subsidized lunch program was coded as a zero (0) with nonparticipation coded as a one (1).

Height/weight ratio. Height and weight information was required to determine the effect of actual body-size on AEAT scores. All fourth- and sixth-grade students in the Lincoln County public schools were weighed and measured at least once a year and the information was recorded in the cumulative folders. However, due to the greater enrollment at the consolidated junior high schools, weighing and measuring of students at this level was optional. Also, students who moved frequently or were often absent had missing height/weight data. As a result, 97 of the 166 eighth-grade females and 5 of the 213 fourth- and sixth-grade females had no height and weight data recorded in the files. Therefore, self-reported height and weight information was collected from some of the students and correlated with their actual heights and weights recorded in their cumulative folders. Self-reported height and actual height had a correlation coefficient of 0.7551, with self-reported and actual weight having a correlation coefficient of 0.9169. Both coefficients were strong and indicated that the self-report data had acceptable reliability for use in this analysis.

Using the recorded height/weight data the computer calculated a height divided by weight ratio. In this way a "thinness" index was created as an indicator of differential body types.

Procedures

To gain access to a public school system in North Carolina, a brief proposal for the research project was submitted to the superintendent of the Lincoln County Schools. The researcher then met with the superintendent who gave his approval and agreed to submit the research proposal to the Lincoln County School Board for their review. Final approval to conduct the research in the Lincoln County Schools in North Carolina was obtained on November 16, 1987.

Sampling

The selected county school system is located approximately 35 miles west of Charlotte, 80 miles west of Winston-Salem and 100 miles east of Asheville. The most recent figures available from the Lincoln County Chamber of Commerce report the county population in 1985 as 45,647 and the city population as 5,755. Unemployment in 1985 was 6.7% with 45% of the people working in manufacturing jobs and 42% in nonmanufacturing positions. Approximately 2% of the people were in agriculture. Currently, estimated

average family income is \$22,676.00 with the median family income being \$17,668.00. There are 14 elementary school with an approximate enrollment of 4,511, and 3 junior high schools with an approximate enrollment of 2,342. The three high schools have an enrollment of 1,808 students.

A cluster sampling procedure by classrooms was used to determine the sample for fourth- and sixth-grades. While cluster sampling was not one of the more preferred sampling methods, it was most appropriate for a public school study since it is the least disruptive to the school's program.

Schools containing fourth and sixth grades were randomly selected to yield a sample size of 100 girls per grade level. Each classroom cluster had an estimated size of 28 resulting in approximately 14 females per grade. This method reduced the sample of the entire classroom tested to only the female students desired for the study. The approximate number of classroom clusters was determined by dividing the sample size (i.e., 100 females per grade level), by the estimated number of females per classroom resulting in seven classrooms for each grade level. An additional classroom was used to insure an adequate sample size (i.e., number of fourth- and sixth-grade classrooms

equals at least eight). Each school in the county containing the fourth- and sixth-grades was assigned a number from zero to eight. The needed number of schools to yield eight clusters per grade level was randomly selected using a table of random numbers. Due to the possibility of increasing the effect of selection bias, all classrooms per grade level within each selected school having fourth- and sixth-grades were sampled.

Since the eighth-grades are in consolidated schools, all three schools were surveyed. Eighth-grade students were grouped alphabetically for homerooms and by ability for subjects, making it impossible to obtain a random sample using classrooms. Therefore all eighth-grade students were given consent forms to take home. Although both boys and girls in each classroom were given the AEAT, only the females comprised the sample. A minimum sample size of 100 eighth-grade girls was desired.

Data Collection

Once the schools were selected, an appointment was made with the individual principals to explain the study and the required teacher involvement. Following this meeting, a consent form (Appendix D) was left for the principals to sign. Three days after the meeting, the researcher collected the signed consent forms for

xeroxing. The informed consent forms including parental permission were sent home with all students from the selected fourth-, sixth-, and eighth-grade classrooms. Only those students returning a signed consent form were surveyed. If an inadequate number of the initial consent forms were returned, a second, and third form was sent home with the students.

Testing. Those children who had returned their consent forms completed the AEAT and the questionnaire. While all children with returned consent forms were tested, only the scores of female students were used in this study. The researcher administered, collected, and scored all AEAT instruments. For children with reading difficulty, the AEAT was read orally to the child by the researcher. The brief four-item questionnaire assessed the areas of dieting history, body image, anxiety, and body self-esteem. The questionnaire was read orally to the group allowing time for response to each item. Students were also asked to provide self-report data of their height and weight.

Teachers were given a listing of participating students from their homeroom and asked to note any eating-disordered behaviors and/or any other specific characteristics. The class lists were collected and compiled by the researcher.

School records. The researcher collected the demographic information from the school records. Information included race (recorded as white or nonwhite), number of children in the family, free lunch status (recorded as participating or nonparticipating), absenteeism (recorded as days absent during the previous year), height in inches, weight in pounds, Otis-Lennon School Ability Test scores, and the spring 1987 CAT scores.

Reporting. After all data had been compiled and analyzed, a report was sent to the school superintendent. The researcher will assist interested counselors in working with those students identified as high risk, and if desired, will provide in-service workshops on eating disorders for school counselors.

Data Analysis

The data first was analyzed to determine if there were significant differences in the fourth-, sixth-, and eighth-grades' AEAT scores. Second, the independent variables of race, family size, family income, diet history, body-esteem, school anxiety, weight satisfaction, achievement, absenteeism, overt behavior, and school ability was examined to determine to what extent they accounted for the variance in the dependent variable (i.e., presence of distorted eating attitudes).

Students were categorized according to a height/weight ratio.

Descriptive statistics. The SPSSX statistical package was used to calculate descriptive statistics for age, race, number of children in the family, family income level, achievement, school ability, diet history, weight satisfaction, body satisfaction, school anxiety, and the eating attitudes test scores for the combined sample. Means and standard deviations were reported for age, number of siblings, achievement, and School Ability Index scores. The mode was reported for race, family income level, dieting history, weight satisfaction, body satisfaction, and school anxiety.

Analysis of variance (ANOVA). An ANOVA was calculated to determine if there was a significant difference in the mean AEAT scores from the three different grade levels. In addition, the mean for the AEAT from each separate grade was reported.

Multiple regression analysis. A multiple regression analysis was computed to determine the amount of variance in scores on the dependent measure (AEAT) that could be accounted for by the independent variables. An F test was used to determine the significance of the multiple regression coefficient at an alpha level of 0.05 ($p > 0.05$). In addition, unique

contribution of each independent variable was calculated and those making statistically significant unique contributions were noted.

Scatterplots of the standardized residuals with each independent variable, as well as the standardized residuals and the predictor variables was provided. The scatterplots were used to examine the assumptions of multiple regression analysis.

CHAPTER IV

RESULTS

Introduction

Chapter IV presents description of the subjects participating in the study and the results of the data analysis as determined by analysis of variance and multiple-regression procedures. Descriptive statistics are reported for the combined sample as well as for each grade level. Means and standard deviations are reported for the AEAT, age, number of siblings, absenteeism, achievement, O-LSAT scores, height, and weight while the mode is reported for income, diet history, weight satisfaction, appearance satisfaction, and school anxiety. Finally, student characteristics, as reported by their classroom teachers, are presented.

Overview of Study and Results

The sample was composed of fourth-, sixth-, and eighth-grade females in the Lincoln County public schools. A random cluster sampling method was used. All female students in the selected schools were given parental permission forms to take home. The returned consent forms yielded a total sample size of 379 females. Data collected included the dependent measure,

the AEAT, and 13 independent variables. The AEAT was administered by the researcher to all participating fourth-, sixth-, and eighth-grade females. The independent variables included age, race, income level as determined by participation in the subsidized lunch program, number of siblings in the family, days absent during the 1986-1987 school year, CAT scores, O-LSAT scores, height, weight, and self-reported diet history, weight satisfaction, body satisfaction, and school anxiety. Data was entered and analyzed by the researcher using the Vax computer at the University of North Carolina at Greensboro.

Two hypotheses were examined. First, mean scores on the AEAT were compared to determine if a statistically significant difference existed across grade levels. Second, independent variables were examined to determine how well they accounted for the variance in AEAT scores. Analysis of variance and multiple regression analyses were calculated for the total sample and separately for fourth-, sixth-, and eighth-grade subjects.

Subjects

A total of four elementary schools containing grades four and six were randomly selected from the eight primary schools in the county, resulting in a

sample size of 109 fourth-grade females and 104 sixth-grade females. Since the eighth grades were already clustered into three consolidated junior high schools, all three schools were included to eliminate additional selection bias. The eighth-grade sample consisted of 166 females. Since 47 of the total 379 subjects in the study were non-white, race was eliminated from the data analysis.

Descriptive Statistics

Dependent Variable

For the entire sample, the mean on the AEAT was 14.61 (SD = 8.61). The AEAT means for the fourth-, sixth-, and eighth-grades, respectively, were 15.67 (SD = 9.24), 14.73 (SD = 9.06), and 13.72 (SD = 7.82). Twenty-eight fourth-graders (0.26%), 17 sixth-graders (0.16%), and 24 eighth-graders (0.15%) in this study scored above 22 which is the score required for diagnosis of eating disorders in adolescents and adults when using the original form, the EAT-26. Based on the literature review, the higher percentage of fourth-graders scoring above 22 on the AEAT is unexpected. A larger percentage of females in the older group (i.e. the eighth-graders) would be expected.

Independent Variables

Other variables selected for exploration, based on the review of literature, were age, number of children in the family, absenteeism, achievement scores, O-LSAT scores, CAT scores, height, weight, diet history, weight satisfaction, appearance satisfaction, and school anxiety.

Combined sample. Means and standard deviations shown in Table 1 were calculated for the combined sample for the variables of age, number of children in the family, absenteeism, CAT scores, and O-LSAT scores. The mean age was 147.61 months (SD = 20.98) or approximately 12 years of age, which is within the reported age range of onset (Beaumont, 1972; Harding, 1985; Schwabe et al., 1981; Steiner, 1982; Steinhausen, 1983). Absenteeism, which has been found to be characteristic of eating-disordered children (Russell, 1975), had a mean of 6.62 days (SD = 6.03). For this sample of pre-adolescent females, the mean for family size was 2.45 children (SD = 1.19), which is similar to findings regarding adolescent and adult eating-disordered females (Bruch, 1962). The means for CAT scores (635.10, SD = 139.10) and O-LSAT scores (101.92, SD = 14.45) were consistent with the research supporting average or above-average achievement and intelligence in eating-disordered

adolescent females (Harding, 1985; Muuss, 1986; Steiner, 1982; Weiss, 1983). The mean height and weight for the sample were 58.98 inches (SD = 4.96) and 99.72 pounds (SD = 33.33), respectively. These results can be found in Table 1 on the following page.

The modes for participation in the subsidized lunch program, diet history, weight satisfaction, appearance satisfaction, and school anxiety were identified from frequency data. For this sample, the mode for income, based on participation in the subsidized lunch program, was non-participation in free/reduced lunch, indicating a higher socioeconomic level which is consistent with reports by Maloney and Klykylo (1983) and Steiner (1982). The mode for past diet history was "yes", affirming research findings that eating-disordered females had a history of recurrent dieting (Greensboro Daily News & Record, 1986). The mode for school anxiety was "yes" which supports findings of school anxiety, school phobia, and difficulties at school as reported by Bruch (1973), Jacobs and Isaacs (1986), Mendelson and White (1985), and Russell (1975).

Grade level. The means for age, number of children in the family, absenteeism, achievement scores, O-LSAT scores, height, and weight were calculated for each grade level and appear in Table 1. For the fourth-

Table 1.

Descriptive Results.

Variable	Total Sample (N = 379)		4th Grade (N = 109)		6th Grade (N = 104)		8th Grade (N = 166)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
AEAT	15.595	9.455	15.670	9.455	14.731	9.061	13.717	7.817
AGE	147.612	20.957	119.614	4.363	144.144	5.432	168.169	4.972
Absenteeism	6.616	6.026	5.910	5.832	5.816	4.934	7.603	6.767
Siblings	2.447	1.190	2.472	1.289	2.612	1.402	2.327	0.983
CAT	635.102	139.098	684.716	42.387	416.677	43.411	739.723	40.038
O-LSAT	101.921	14.453	102.331	15.460	101.320	15.227	102.006	13.958
Height	58.978	4.956	54.093	2.688	57.825	3.877	63.175	3.185
Weight	99.719	33.328	73.752	16.197	95.250	30.657	121.117	31.170

grade females, means were 9.97 years of age (SD = 4.36 months), 2.47 siblings (SD = 1.29), 5.91 days absent from school (SD = 5.83), 684.72 CAT total battery (SD = 42.39), 102.38 on the O-LSAT (SD = 15.46), 54.09 inches tall (SD = 2.69 inches), and weight of 73.75 pounds (SD = 16.20 pounds), respectively. The sixth-graders were, on average, 12.01 years of age (SD = 5.43 months), had 2.61 siblings (SD = 1.40), absent 5.82 days (SD = 4.93), scored 416.68 on the CAT (SD = 43.41), scored 101.32 on the O-LSAT (SD = 15.23), 57.83 inches in height (SD = 3.88), and weighed 95.25 pounds (SD = 30.66). Finally, the eighth-grader means for age, number of children, absenteeism in number of days, CAT scores, O-LSAT scores, height in inches, and weight in pounds were 14.01 years of age (SD = 4.97 months), 2.33 (SD = 0.98), 7.60 (SD = 6.77), 739.72 (SD = 40.04), 102.01 (SD = 13.96), 63.18, and 121.12 (SD = 31.17), respectively.

The mode for the dichotomously coded variables of participation in subsidized lunch, diet history, weight satisfaction, appearance satisfaction, and school anxiety were also calculated by grade level. For the fourth-grade the mode for lunch status was non-participation, "no" for diet history, "yes" for weight satisfaction, "yes" for appearance satisfaction, and

"yes" for school anxiety. For the sixth-grade the mode for lunch status was non-participation, "yes" for diet history, "yes" for weight satisfaction, "yes" for appearance satisfaction, and "yes" for school anxiety. For the eighth-grade the mode for lunch status was non-participation, "no" for dieting history, "no" for weight satisfaction, "no" for appearance satisfaction, and "yes" for school anxiety.

Height/Weight Ratio

As discussed in Chapter III, height and weight information was required to determine the relationship of actual body-size to AEAT scores. Ninety-seven of the eighth-grade subjects and 5 fourth- and sixth-grade subjects had no height and weight data recorded in the files. Subjects were asked to voluntarily report their believed height and weight. Height and weight information was collected on 68 students and correlated with their actual height and weight recorded in their cumulative folders. Self-reported height and actual height had a correlation coefficient of 0.76, with self-reported and actual weight having a correlation coefficient of 0.92. Both coefficients were strong and indicated that the self-report data had acceptable reliability for use in this analysis.

Hypotheses

Hypothesis 1: AEAT Mean Differences

The first research hypothesis examined the difference in mean AEAT scores across the fourth-, sixth-, and eighth-grade females. The means for fourth-, sixth-, and eighth-grades were 15.67, 14.73, and 13.72, respectively. Analysis of Variance (ANOVA) for the fourth-, sixth-, and eighth-grade subjects as reported in Table 2, yielded an F value of 1.73 ($p < 0.179$) which was not statistically significant at the 0.05 level. Given the school differences between the fourth- and sixth-grades (elementary schools), and the eighth-grades (junior high schools), a second ANOVA was calculated to determine if a difference existed between the combined fourth- and sixth-grade females versus the eighth-grade females. Again, no statistically significant difference was found ($F = 1.73, p < 0.096$). Since no statistically significant difference was found between fourth-, sixth-, and eighth-grade scores on the AEAT, or between the comparison of fourth- and sixth-grade versus the eighth-grade scores, the first hypothesis was not supported.

Table 2

Analysis of Variance.

Source	DF	Sum of Squares	Mean Squares	F	P > F
Model	2	255.2659	127.633	1.73	0.1788
Error	376	27752.2644	73.809		
Total	378	28007.5303			
Contrast	1	205.2334		2.78	0.0962

* $p < 0.05$

Hypothesis 2: Prediction of AEAT Scores

The second hypothesis examined how well the selected independent variables accounted for the variance in AEAT scores. Correlations among the dependent variable and the independent variables, as well as the regression analysis, were considered.

The correlation matrix is shown in Table 3 below. Correlation coefficients for the AEAT with the independent variables were moderate to low for age ($r = -0.07$), race ($r = -0.13$), participation in the subsidized lunch program ($r = 0.10$), absenteeism ($r = 0.09$), number of siblings ($r = 0.08$), CAT ($r = -0.11$), O-LSAT ($r = -0.34$), diet history ($r = 0.35$), weight satisfaction ($r = -0.17$), appearance satisfaction ($r = -0.12$), school anxiety ($r = 0.09$), height ($r = -0.06$), weight ($r = 0.05$), grade level ($r = -0.10$), and school location ($r = 0.02$). The correlations between the AEAT and O-LSAT and the diet history were the two strongest correlations. The correlation of the AEAT with the O-LSAT was expected based on previous research findings regarding the relationship between IQ and eating disordered attitudes (Smart et al., 1976). The correlation between the AEAT and self-reported diet history also supports previous reports (Greensboro Daily News and Record, 1986).

Table 3.

Correlation Matrix.

	Y ^a	X1 ^b	X2 ^c	X3 ^d	X4 ^e	X5 ^f	X6 ^g	X7 ^h	X8 ⁱ	X9 ^j	X10 ^k	X11 ^l	X12 ^m	X13 ⁿ
Y	1.00	-0.065	0.096	0.087	0.080	-0.107	-0.335	0.349	-0.186	-0.119	0.091	-0.062	.054	-0.095
X1	-	1.00	-0.025	0.133	-0.022	0.217	-0.086	0.253	-0.357	-0.439	0.038	0.755	0.596	0.972
X2	-	-	1.00	-0.06	0.323	-0.116	-0.275	-0.055	0.064	0.112	-0.007	-0.070	-0.057	-0.078
X3	-	-	-	1.00	-0.114	0.086	-0.017	0.101	-0.09	-0.119	0.117	0.078	0.061	0.123
X4	-	-	-	-	1.00	-0.131	-0.118	-0.024	0.032	0.072	-0.051	-0.079	-0.063	-0.058
X5	-	-	-	-	-	1.00	0.242	0.080	-0.114	-0.189	-0.024	0.259	0.157	0.245
X6	-	-	-	-	-	-	1.00	-0.098	-0.009	-0.013	-0.046	0.006	-0.089	-0.008
X7	-	-	-	-	-	-	-	1.00	-0.466	-0.319	0.183	0.305	0.449	0.244
X8	-	-	-	-	-	-	-	-	1.00	0.670	-0.169	-0.384	-0.519	-0.355
X9	-	-	-	-	-	-	-	-	-	1.00	-0.174	-0.421	-0.481	-0.453
X10	-	-	-	-	-	-	-	-	-	-	1.00	0.047	0.060	0.036
X11	-	-	-	-	-	-	-	-	-	-	-	1.00	0.746	0.746
X12	-	-	-	-	-	-	-	-	-	-	-	-	1.00	0.579
X13	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00

^aAEAT
^bAge
^cFamily Income
^dAbsent
^eNumber of Siblings

^fCAT
^gPOLSAT
^hDiet History
ⁱWeight Satisfaction
^jLook Satisfaction

^kSchool Anxiety
^lHeight
^mWeight
ⁿGrade Level

A multiple-regression analysis was computed on the 379 subjects resulting in a coefficient of determination of $R^2 = 0.32$, $F = 8.67$, $p < 0.0001$ for the entire sample. Therefore, the combined independent variables accounted for 32% of the variance in the AEAT scores. Following Pedazur's (1982) recommendations for examining the contribution of independent variables, the following independent variables were found to yield statistically significant unique contributions at the alpha level of 0.05: self-report diet history ($p < 0.001$), self-report weight satisfaction ($p < 0.05$), school location within the county ($p < 0.004$), Otis-Lennon School Ability Test scores ($p < 0.0001$), and the height/weight ratio ($p < 0.0234$). Results of the multiple-regression analysis supported the second hypothesis, confirming that age, income, absenteeism, number of siblings, CAT scores, O-LSAT scores, height/weight ratio, and the self-reported variables of diet history, appearance satisfaction, weight satisfaction, and anxiety which accounted for 32% of the variance, can be used to predict AEAT scores. Parameter estimates for the full regression model are shown in Table 4 on the following page.

Table 4

Parameter Estimates for the Total Sample.

Parameter	Estimate
Lunch Status (0 = non-subsidized lunch) (1 = subsidized lunch)	-0.3117 0.0000
Diet History (0 = no reported previous dieting) (1 = previous reported dieting)	-5.5567* 0.0000
Weight Satisfaction (0 = not satisfied) (1 = satisfied)	-2.4084* 0.0000
Looks Satisfaction (0 = not satisfied) (1 = satisfied)	-1.2629 0.0000
School Location (1 = school grades 4 & 6) (2 = school grades 4 & 6) (3 = school grades 4 & 6) (4 = school grades 4 & 6) (5 = junior high grade 8) (6 = junior high grade 8) (7 = junior high grade 8)	-0.9442* -1.5094* 3.4839* 0.1268* -2.4261* 1.1734* 0.0000*
School Anxiety	0.3269
Absenteeism	0.0992
OLSAT	-0.1882*
CAT	-0.0004
Number of Siblings	0.0549
Age	-0.0542
Height/Weight Ratio	8.3032*

* independent variables making significant unique contributions to prediction of AEAT scores

The regression equation for the full model, excluding school location which depends on the school attended, is $AEAT = 38.379 + 0.312$ (lunch status) + 5.557 (diet history) - 2.408 (weight satisfaction) - 1.263 (look satisfaction) + 0.099 (absenteeism) - 0.188 (0-LSAT) - 0.0004 (CAT) + 0.055 (siblings) - 0.054 (age) + 8.303 (height/weight) + 0.327 (school anxiety).

Prediction of AEAT scores by grade level.

Following the multiple regression analysis for the full model, additional analyses were calculated for each grade level. An alpha level of 0.05 was set.

The coefficient of determination for the 109 fourth-grade females was 0.44 ($F = 4.72$, $p < 0.0001$) with self-reported diet history the only variable making a statistically significant unique contribution to the prediction of AEAT scores. The regression equation for the fourth-grade using all the independent variables with the exception of school location was $AEAT = 72.6786 - 1.3784$ (lunch status) + 8.36 (diet history) - 3.24 (weight satisfaction) - 3.58 (looks satisfaction) + 0.1966 (absenteeism) - 0.102 (0-LSAT) - 0.0381 (CAT) + 0.6387 (number of siblings) - 0.22 (age) + 7.601 (height/weight) + 2.591 (school anxiety). School location was not included in the equation since the regression coefficient for this variable depends on the

school attended, but can be found in Table 5 on the following page.

The sixth-grade sample of 104 females had a coefficient of determination of 0.45 ($F = 4.63$, $p < 0.0001$). For the sixth-grade, self-reported diet history, school location, and O-LSAT scores yielded statistically significant unique contributions to prediction with alpha values of 0.0009, 0.004, and 0.007, respectively. The regression equation for the sixth-grade was $AEAT = 11.065 + 0.891$ (lunch status) - 0.939 (weight satisfaction) - 3.778 (looks satisfaction) - 0.232 (absenteeism) - 0.223 (O-LSAT) + 0.01 (CAT) + 0.072 (number of siblings) + 0.153 (age) + 10.853 (height/weight) - 2.271 (school anxiety). The parameter estimates are located in Table 5.

The regression analysis for the eighth-grade sample resulted in a lower coefficient of determination (0.27) than did the fourth- or sixth-grade analysis. Unique contributions to prediction were found for self-reported diet history ($p < 0.0017$) and the height/weight ratio ($p < 0.0477$). The parameter estimates for school location depend on the school attended and can be located along with other parameter estimates in Table 5.

Table 5.

Parameter Estimates by Grade Level.

Parameter	4th Grade Estimate	6th Grade Estimate	8th Grade Estimate
Lunch Status (0 = non-subsidized lunch) (1 = subsidized lunch)	1.3784 0.0000	- 0.8906 0.0000	- 1.1285 0.0000
Diet History (0 = no previous dieting) (1 = previous dieting)	- 3.3673* 0.0000	- 7.1729* 0.0000	- 4.8439* 0.0000
Weight (0 = not satisfied) Satisfaction (1 = satisfied)	3.2417 0.0000	0.9387 0.0000	2.2159 0.0000
Looks (0 = not satisfied) Satisfaction (1 = satisfied)	3.5753 0.0000	3.7779 0.0000	- 0.2852 0.0000
School Location (1 = school w/grades 4 & 6) (2 = school w/grades 4 & 6) (3 = school w/grades 4 & 6) (4 = school w/grades 4 & 6) (5 = school w/grade 8) (6 = school w/grade 8) (7 = school w/grade 8)	0.8587 - 0.4731 2.2816 0.0000	- 1.2707* - 3.0667* 5.6469* 0.0000*	- - - - - 2.2302 0.8569 0.0000
School Anxiety	2.5913	- 2.2719	- 0.3659
Absenteeism	0.1966	- 0.2319	- 0.1072
O-LSAT	- 0.1021	- 0.2229*	- 0.0429
CAT	- 0.0380	0.0096	- 0.0425
Number of Siblings	0.6387	0.0719	- 0.5756
Age	- 0.2204	0.1533	0.1127
Height/Weight Ratio	7.6010	10.8534	13.1886*

*Independent Variables Yielding Significant Unique Contributions to Prediction.

For the full model, the regression equation for the eighth-grade subjects was $AEAT = 27.31 + 1.129$ (lunch status) $+ 4.844$ (diet history) $- 2.216$ (weight satisfaction) $+ 0.286$ (looks satisfaction) $+ 0.107$ (absenteeism) $- 0.0429$ (O-LSAT) $- 0.0425$ (CAT) $- 0.576$ (number of siblings) $+ 0.113$ (age) $+ 13.189$ (height/weight) $- 0.366$ (school anxiety).

The histogram and the normal probability plots of the standardized residuals approximated a normal distribution. Individual scatterplots of the dependent variable, the AEAT, with each of the independent variables, as well as the scatterplot of the predicted scores and the residuals supported the assumptions of multiple regression.

Teacher Report

To obtain data on behavioral characteristics associated with distorted eating attitudes, the teachers were asked to note characteristics of their female students. For this study, only the characteristics of females who scored above the mean of 14 on the AEAT were considered. Twenty-eight of the 194 females scoring above the mean on the AEAT were described by their respective teachers. Student characteristics described, grade level, and frequency are reported in Table 6.

Table 6

Teacher Reported Characteristics.

Descriptors	Grade	Frequency
Physical:		
sick a lot	4	1
sore throats	4, 4	2
does not feel well	4	1
complains of stomach ache	4	1
back problems	4	<u>1</u>
		6
Academic:		
academically gifted	4	1
good student (makes A's)	4, 8	2
capable student when tries learning disabled	4	2
low grades	4, 6	2
poor achiever	4	1
tries hard on work	8	1
low reader	4, 4, 4	3
does not always complete work	4, 4, 8	3
frequently absent	4, 4, 6	3
seldom does homework	4, 8	2
good work	6	1
	6	<u>1</u>
		21
Weight/Food Related:		
does not eat properly	4, 6	2
eats a small salad for lunch almost every day	4	1
eats a lot	6	1
sees a nutritionist	8	1
overweight	4, 8, 8	3
small child	4	1
very thin	6	1
does not eat lunch	8	1
worries about being overweight	6, 6	2
constantly talks about her weight	6	1
tries not to gain weight	6	<u>1</u>
		15

Table 6

Teacher Reported Characteristics (continued).

Descriptors	Grade	Frequency
Social/Emotional:		
introverted	4	1
more open in small groups	4, 4	2
talks freely to the teacher and students after school	4	1
pleasant	4, 4, 4, 4, 6, 6	6
shy	4, 4	2
quiet	4, 4, 6, 6, 6	5
wants attention	4, 4	2
seeks attention by being loud and obnoxious at times	4, 4, 6	3
aggressive	8	1
very likable	4	1
well liked	4	1
very energetic	4	1
seems to be in a shell	4, 6	2
does not readily voice opinions	4	1
very sensitive	4	1
gets along well w/everyone	4, 4, 4, 4, 4	5
happy; smiles	4, 4	2
very cooperative	4	1
difficulty getting along with certain students and teachers	6	1
negative attitude occasionally	6	1
emotional	4, 6, 6	3
emotional problems	8	1
poor self-image	8	1
acts scattered	6	1
		<u>46</u>
Home Situation:		
death of mother; lives with relative; little or no contact with the father;	4, 4	<u>2</u> 2

Table 6

Teacher Reported Characteristics (continued).

Descriptors	Grade	Frequency
Sexual Attitudes	6	$\frac{1}{1}$

The descriptors were classified by the researcher as physical characteristics, academic behaviors, weight/food related behaviors, social/emotional behaviors, home situations, and sexual interest.

Fourth-Grade Females

Thirteen of the 63 fourth-grade females scoring above the mean on the AEAT were described by teachers, who indicated that several of these students had more illnesses than most students. The academic behaviors reported were as follows: tries hard on work, makes good grades, academically capable, good student (makes A's), capable when she tries, learning disabled, makes low grades, low reader, work is not always completed, and frequently absent. Weight/food related behaviors for fourth-graders included does not eat properly, eats a small salad for lunch almost every day, and is overweight. Social/emotional behaviors reported included does not readily voice an opinion, tries to please, very energetic, quiet, talks easily with peers and teachers after school, introverted, more open in small groups, seeks attention, complains, generally quiet but occasionally loud and obnoxious to get attention, very likable, well-liked, pleasant, shy, seems to be in a shell, does not readily voice opinions, very sensitive, gets along with most all students,

happy, very cooperative, and smiles. The home situation of several of the students had at one time been unstable. The mothers of two of the females were deceased. Of these two girls, one's father and stepmother lived in another town while she lived with her grandmother, and the other lived with an aunt and several of her sisters.

Sixth-Grade Females

Nine of the 46 sixth-grade females scoring above the mean were described by the teachers. The only physical descriptor reported was for one female, whom the teacher indicated complained of frequent stomach aches. Academic descriptions provided by the teachers were learning disabled, good worker, works hard but often does not finish work, and seldom does homework. Weight/food related behaviors included; does not eat properly, eats a lot, very thin, worries about being overweight even though very thin, constantly talks about being overweight, and tries not to gain weight. Social/emotional characteristics were pleasant, seeks attention by being loud and obnoxious at times, seems to be in a shell, has difficulty getting along with certain students and adults, occasional negative attitude, and acts scattered. No specific information regarding the

home situations was reported. One student was described as always writing spelling sentences dealing with sex.

Eighth-Grade Females

Response from the eighth-grade teachers was low with descriptors provided for only five of the 71 females scoring above the mean on the AEAT. The only physical characteristic reported was back problems. Academically, females were described as being poor achievers, frequently absent, low readers, and good students. Weight/food related descriptors were sees a nutritionist, does not eat lunch, and is overweight. Social/emotional behaviors included aggressive, emotional problems, and poor self-image. A "poor home situation" was reported for one student.

Combined Responses

Due to the low response rate, characteristics may be collapsed to provide a summary of results which is somewhat more enlightening. Six of the 91 descriptors concerned illnesses and physical complaints. Twenty-one responses concerned academic characteristics with eight referring to academic excellence and 13 referring to academic difficulties. Food- and weight-related factors were reported for 15 of the students including overweight, underweight, restricted diets, and expressed concern over weight. Social and emotional

characteristics were listed 46 times with the majority of responses describing a pleasant, cooperative, well liked individual. Two students were living with relatives due to their mother's deaths and the absence of their fathers.

Summary

Data analysis did not support the first hypothesis.; no statistically significant difference in AEAT scores across the fourth-, sixth-, and eighth-grades were found. For the total sample, 32% of the variance in AEAT scores was explained using all the independent variables. Thus the second hypothesis was supported. An additional regression analysis by grade level found differences in the model with coefficients of determination of 0.44%, 0.44%, and 0.27% for fourth-, sixth-, and eighth-grades, respectively.

CHAPTER V

DISCUSSION

Introduction

The purpose of this study was twofold. First, differences in eating attitudes between fourth-, sixth-, and eighth-grade females were examined. Second, the study examined independent variables associated with distorted eating attitudes in pre-adolescent females. Data from the Adapted Eating Attitudes Test (AEAT), the dependent measure, and the following independent variables were examined; participation in the subsidized lunch program, CAT scores, O-LSAT scores, absenteeism, number of siblings in the family, height, weight, and the self-reported variables of dieting history, weight satisfaction, looks satisfaction, and school anxiety.

The results of the study showed no statistically significant differences in eating-disordered attitudes, as measured by the AEAT, among fourth-, sixth-, and eighth-grade females. The regression model containing all the independent variables accounted for 32% of the variance in the AEAT scores showing that approximately 1/3 of the variance was predicted based on use of these variables. When analyzed by grade, the variance

accounted for in the fourth- and sixth-grade sample rose to 44.1% and 44.5%, respectively, but dropped to 27.0% for eighth-graders. The remainder of this chapter consists of a discussion of the AEAT mean differences, the prediction of AEAT scores, teacher reported characteristics, implications of the study, limitations of the study, and conclusions drawn from the results of the study.

AEAT Mean Differences

The first hypothesis was that there would be a difference in AEAT scores among fourth-, sixth-, and eighth-grade females. However, the analysis of variance among the means of these three groups found no statistically significant difference. Since some differences were found in the regression analysis for eighth-grade females as compared with results for the fourth- and sixth-grades, a second analysis of variance was conducted combining the fourth- and sixth-graders and comparing the resulting group with the eighth-graders. Again, no statistically significant differences were found. Therefore, in this sample of fourth-, sixth-, and eighth-grade females, no statistically significant differences were found in eating attitudes. These findings are surprising when considering the research reviewed in Chapter II, which

indicated that eating-disordered attitudes are more prevalent in adolescents and adults than in pre-adolescents (Boskind-Lodahl & White, 1976; Harding, 1985; Theander, 1970). The similarities in mean scores on the AEAT may indicate that the difference occurs prior to fourth-grade. Possibly socialization and cultural influences affect children younger than nine years of age.

Prediction of AEAT Scores

The second hypothesis examined how well the independent variables accounted for the variance in AEAT scores. In the full model, 32% of the variance was accounted for indicating that some of the selected independent variables were important in prediction. The independent variables yielding statistically significant unique contributions were self-reported dieting history, weight satisfaction, O-LSAT scores, height/weight ratio, and school location. With the exception of school location, the findings were supported by the literature reviewed in Chapter II, which indicated that previous dieting history (Greensboro Daily News & Record, 1986; Sbonck, 1981), weight satisfaction (Rourke et al., 1984), O-LSAT scores, i.e. IQ, (Bruch, 1980; Steiner, 1982), and height/weight ratio (Humphrey, 1979) were related to eating-disordered attitudes. School location

was found to have an effect when all the schools in the study were included in the analysis. A surprising predictor, the effect due to school location, could be the result of the demographics of the area where the school was located. Because the fourth- and sixth-grades were housed in the same schools and the eighth-grades were housed in separate schools, no additional conclusions could be drawn.

The literature has reported family income, appearance satisfaction, and CAT scores to be important predictor variables in assessing eating disorders. Findings in this study, however, did not support the significance of these variables, but this could be due to the method of measurement required when doing research in the public school-setting. Family income was assessed through participation in the subsidized lunch program and appearance satisfaction (i.e. body-esteem) was assessed through self-report data. Although necessary in this study, both types of measurement are subject to measurement error.

The two other independent variables not found to be significant predictors were absenteeism and family size. The results of this study supported Jacobs' and Isaacs' (1986) contention that absenteeism and family size were

not significant predictors of eating-disordered attitudes in pre-adolescent females.

Prediction by Grade Level

Additional regression models were calculated for fourth-, sixth-, and eighth-grade females to identify whether the regression models were similar. Similar models were found for the fourth- and sixth-grade subjects with a different model resulting for the eighth-grade sample. For both fourth- and sixth-grade females, 44% of the variance in the AEAT scores was accounted for by the model, but only 27% was accounted for using the eighth-grade sample. While this research with pre-adolescent females was exploratory, the poorer fit for the older females appears inconsistent with the research cited in Chapter II. The literature reported that the selected predictor variables are present in eating-disordered adolescent females (Beaumont et al., 1981; Harding, 1985; Muuss, 1986; Schwabe et al., 1981; Theander, 1970). Therefore, the model would be expected to provide the best fit for those subjects closer to adolescence.

For all three grade levels self-reported previous dieting history yielded a significant unique contribution. In addition, the sixth-grade model also received statistically significant contributions from

the O-LSAT scores and school location. The school location effect was present for only the sixth-grade females when data were analyzed by grade level. It is surprising that there was a school effect for the sixth-graders but not the fourth-graders who were housed in the same schools. Based on research, O-LSAT, which equates to an IQ score, would be expected to predict elevated scores on the AEAT (Bruch, 1980; Muuss, 1986; Weiss, 1983). Findings supported the research regarding IQ scores, showing that females with higher IQ's scored higher on the AEAT.

The height/weight ratio for the eighth-grade sample made a significant unique contribution to prediction. The larger the ratio (i.e. the thinner the female), the higher the subjects's score on the AEAT score. While the increased importance of body-size as the subjects became older was consistent with work done by Jacobs and Isaacs (1986) concerning body-esteem and body-size, it is interesting that there was no effect for the extremely heavy subjects. This finding could be a function of the original instrument, the EAT which was designed to assess anorexia nervosa (extreme thinness and dieting), and bulimia (Garner & Garfinkel, 1979), not compulsive overeaters (extremely heavy children). Also, eating disorders as measured by the EAT and AEAT

involve psychological and behavioral components not found in all heavy individuals and therefore extremely heavy subjects might not be detected.

Findings regarding the fourth-, sixth-, and eighth-grade subjects reveal at least two different regression models; a fairly good model for the fourth- and sixth-grade subjects and a weak model for the eighth-grade subjects. The difference may be due to developmental differences between fourth- and sixth-graders versus eighth-graders. The poorer fit may also be due to the differences in socialization. The eighth-grade subjects were housed in junior high schools which were different from the elementary school setting of the fourth- and sixth-grades.

Teacher-Reported Characteristics

Since a behavior checklist relating to eating disorders in pre-adolescents and suitable for use in the school setting was not available, teachers were asked to voluntarily note characteristics of their students. The number of usable descriptors was limited due to sporadic teacher response and the researcher's desire to use only females scoring above the mean on the AEAT. However, the results were tabulated since the need for exploratory research was cited in the literature review (Woolston, 1982).

Descriptors were categorized as physical, academic, weight/food related, social/emotional, home situations, and sexual interest. The physical complaints of frequent illness, sore throats, stomach aches, and back problems were consistent with available research (Fundudis, 1974). Reported academic behaviors varied; 8 of the 21 responses pertained to academic excellence and 11 characteristics related to academic difficulties. Academic excellence rather than difficulties has been reported frequently in the literature concerning eating disorders in adolescents and adults (Bruch, 1980; Harding, 1985; Muuss, 1986; Smart et al., 1976; Steiner, 1982; Weiss, 1983). Absenteeism was reported twice and could be interpreted as an indicator of school phobia which has been found in pre-adolescent eating-disordered females (Russell, 1975). Weight/food related characteristics could be grouped according to restrictive eating and overeating. Eight of the 15 responses pertained to dieting behaviors and seven pertained to overeating. Similar food related behaviors have been reported in the literature (Morgan & Russell, 1975; Muuss, 1986; Polivy & Herman, 1985).

Social/emotional characteristics, which corresponded to those reported in the literature, were happy, pleasant, helpful, well-behaved, and cooperative

(Biederman et al., 1986; Bruch, 1962; Hood et al., 1982; Morgan & Russell, 1975; Muuss, 1986; Steiner, 1982; Stroeber, 1981). Only nine of the 46 descriptors related to negative behaviors or unsatisfactory adjustment. Negative behaviors were seeks attention, emotional, aggressive, difficulties in peer relations, and emotional problems which have also been reported in the literature (Casper et al., 1981; Frey, 1984; Harding, 1985; Garner & Garfinkel, 1982; Jacobs & Isaacs, 1986; Stroeber, 1980).

Two subjects were described as having had unstable home situations with the death of their mothers. The literature has not found unstable, insecure homes to be a contributing factor with eating-disordered females (Bruch, 1980; Harding, 1985), and the number of responses in this study was limited. Therefore, this result must be interpreted tentatively since it may be indicative of something other than eating disorders.

Implications

Implications for School Counselors

The information provided from the results of this study has implications for school counselors and other counselors who work with children and families. In the past, eating disorders have not been frequently associated with pre-adolescents and, therefore, may have

gone unaddressed until the disorders became severe. Knowledge of the associated variables identified in this study, as well as awareness of the potential for pre-adolescent onset of eating disorders, can aid in assessment, accurate diagnosis, and treatment. School counselors can use the information to assist in identification of potential eating-disordered females so they can be tracked and referred when necessary.

In addition, the study results support the need for school counseling programs addressing healthy dieting, good nutrition, and proper exercise behaviors. Classroom guidance units providing education in total health and fitness need to be developed. Small group counseling techniques focusing on body-esteem, dieting behaviors, and weight issues also need to be incorporated in the total school counseling program.

Implications for Research

The information provided by the results of this study has implications for future counselor research. While certain predictor variables were established by this study, other variables possibly helpful in prediction of high risk females need to be explored. Therefore, further research is needed to examine other possible predictor variables. More research needs to be done on the psychological aspects, cognitions, and

parenting styles which could be useful in identifying high risk subjects.

In addition, research needs to be conducted on the separate groups of fourth- and sixth-graders versus eighth-graders to explore the differences found between the models. Since no significant differences were found among fourth-, sixth-, and eighth-grade females, younger females may need to be examined to determine the age when distorted eating attitudes form. Knowledge of when eating attitudes begin to change would enable school counselors to intervene during the initial stages, thus reducing the severity of the disorder.

Since the AEAT is an alternate language form of an adult instrument additional research needs to be done on the predictive validity. Additional samples need to be tested using the AEAT. Those subjects with high scores could then be interviewed to determine if an eating disorder is truly evident.

Finally, research needs to be done with a wider range of socioeconomic, cultural, and social levels. The results of this study pertain to children from a fairly rural area; information is needed concerning children from more urban areas.

Limitations

Certain limitations of this study could affect the generalizability of the results.

Sample Selection

To obtain a large enough sample of children, the subjects were selected from the Lincoln County public-school system. A cluster-sampling method, rather than an independent random sample of individual subjects, had to be used to reduce disruption of the school program. Individual schools composed the clusters with the schools being randomly selected. Since the study was limited to fourth-, sixth, and eighth-grade females within one public school system, findings can most safely be generalized to the fourth-, sixth-, and eighth-grade females within the Lincoln County Schools. The use of a fairly rural school system limits the results to counties with similar demographics.

Measurement of Variables

Some concern about using the AEAT may exist since it is an alternate language form of an adult instrument. However, the AEAT has satisfactory alternate-form reliability ($r = 0.76$) with the EAT-26 which has been found to be a reliable and valid instrument. In this study, results using the AEAT must be interpreted for screening and not for diagnostic purposes.

Due to the restrictions of using public-school students, some of the independent variables could not be measured as accurately as desired. Socioeconomic status was measured using the existing data concerning participation/non-participation in the subsidized lunch program. Some of the height and weight data was self-reported information, as were responses on the questionnaire for diet history, weight satisfaction, looks satisfaction, and school anxiety. Use of self-reported data could increase measurement error. Finally, due to a very small number of non-white subjects in the sample, race had to be eliminated from the data analysis. Therefore no conclusions concerning race could be drawn.

The qualitative data concerning characteristics of students required teacher volunteers. Unfortunately, many teachers did not respond although a second and a third request were made by the researcher and in some cases, also by the school counselor. Therefore, results of related characteristics and behaviors must be interpreted with caution. More data is needed prior to the development of a checklist for teachers and school counselors of the characteristics associated with eating disorders.

Summary

This study examined the difference in eating attitudes across the fourth-, sixth-, and eighth-grade females as well as possible predictor variables. The results showed that eating-disordered attitudes were measurable in fourth-, sixth-, and eighth-grade females although no significant differences in mean scores were found. In addition, the selected variables were found to account for 32% of the variance for all subjects. With an analysis by grade level, the amount of variance accounted for by each grade level was 44% for fourth-grade subjects, 45% for the sixth-grade, and 27% for the eighth-grade. This study represents a new area of research in the assessment of eating disorders and merits further study.

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Appendix A
Adapted Eating Attitudes Test

Scoring for the AEAT

On each item only three of the Likert responses receive points. For items 1 - 25 and item 27 an answer of "always" receives 3 points, "usually" 2 points, and often 1 point. Scoring for item 26 is reversed with "never" receiving 3 points, "rarely" receiving 2 points, and "sometimes" receiving 1 point. The points are added yielding one raw score which can range from 0 to 81.

Adapted Eating Attitudes Test – 27

Name _____

Directions: Read each sentence. Circle the word that best tells what you think. The pictures of pies may help you remember the words.

1. I am very scared of being fat.

always



usually



often



sometimes



rarely



never



2. I try not to eat when I am hungry.

always



usually



often



sometimes



rarely



never



3. I think about food.

always



usually



often



sometimes



rarely



never



4. I eat a lot.

always



usually



often



sometimes



rarely



never



5. I cut my food into small pieces.

always



usually



often



sometimes



rarely



never



6. I know how many calories are in the foods I eat.

always



usually



often



sometimes



rarely



never



7. I try not to eat foods like bread and potatoes.

always



usually



often



sometimes



rarely



never



8. I think other people want me to eat more.

always



usually



often



sometimes



rarely



never



9. I throw-up after I eat.

always



usually



often



sometimes



rarely



never



10. I feel very guilty after I eat.

always



usually



often



sometimes



rarely



never



11. I think about being thinner a lot.

always



usually



often



sometimes



rarely



never



12. I think about burning up calories when I exercise.

always	usually	often	sometimes	rarely	never
					

13. Other people think that I am too thin.

always	usually	often	sometimes	rarely	never
					

14. I often think about having fat on my body.

always	usually	often	sometimes	rarely	never
					

15. I take longer than others to eat my meals.

always	usually	often	sometimes	rarely	never
					

16. I try not to eat foods with sugar in them.

always	usually	often	sometimes	rarely	never
					

17. I eat diet foods.

always	usually	often	sometimes	rarely	never
					

18. I feel that food controls my life.

always



usually



often



sometimes



rarely



never



19. I can control myself around food.

always



usually



often



sometimes



rarely



never



20. I feel that others push me to eat.

always



usually



often



sometimes



rarely



never



21. I spend too much time thinking about food.

always



usually



often



sometimes



rarely



never



22. I do not feel comfortable after eating sweets.

always



usually



often



sometimes



rarely



never



23. I try to lose weight.

always



usually



often



sometimes



rarely



never



24. I feel like I cannot stop eating.

always



usually



often



sometimes



rarely



never



25. I like my stomach to be empty.

always



usually



often



sometimes



rarely



never



26. I enjoy trying new fattening foods.

always



usually



often



sometimes



rarely



never



27. I want to throw-up after meals.

always



usually



often



sometimes



rarely



never



Appendix B
Children's Questionnaire

Questionnaire

Name _____

Grade _____

Teacher _____

Directions: Read each question. Circle yes or no for your answer.

- | | | |
|----------------------------------------------------|-----|----|
| 1. I often go on diets. | Yes | No |
| 2. I like what I weigh. | Yes | No |
| 3. I like the way my body looks. | Yes | No |
| 4. I often feel nervous about
things at school. | Yes | No |

Appendix C
Demographic Information

Demographic Information

Child's Name: _____ Birthdate: _____
Grade: _____
School: _____ Race: Non-white
Teacher: _____ White
Otis-Lennon SAI: _____
California Achievement Test: (Scale Score)
Math: _____
Reading: _____
Language: _____
Total Battery: _____

Lunch Status: Free _____
Reduced _____
Paid _____

Height: _____
Weight: _____

Appendix D
Consent Form

Dear Parents,

The Lincoln County Schools has authorized Ms. Martha C. Rhyne to conduct a survey of eating attitudes in our students. While at school each student will be completing a brief eating attitude survey. Data collected will include: a) an eating attitude survey; b) the California Achievement Test scores; and c) the Otis-Lennon School Ability Test scores.

All individual test data will be confidential. Once survey results have been compiled, these will be placed in a format so as not to identify any student by name or grade. Information will help in establishing educational programs to improve health and nutrition in students.

Please sign the form below, and return it tomorrow. If you have any questions, please call the principal.

Sincerely,

Principal

I acknowledge that my son/daughter, _____, will be participating in an eating attitudes survey.

Parent/Guardian