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ADOLESCENT EATING ATTITUDES AND BEHAVIORS

by

Linda Kron Brundage

A Dissertation
Submitted to the
Faculty of The Graduate College
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ADOLESCENT EATING ATTITUDES AND BEHAVIORS

Linda Kron Brundage, Ed.D.

Western Michigan University, 1984

This study sought to establish a baseline of eating attitudes and behaviors among a non-clinical population of adolescents. Three major questions were addressed: Does a spectrum of weight and diet concern exist among adolescent girls which ranges from dieting for cosmetic reasons to anorexia and bulimia? What is the relationship between attitudes and behaviors at a young age and eating disorders at a later age? What are some of the ways boys and girls differ regarding eating attitudes and behaviors? In addition to these major questions an attempt was made to quantify the incidence anorexia and bulimia.

The Eating Disorder Inventory (EDI) (Garner, Olmstead and Polivy, 1983) and the Eating Behaviors Questionnaire (EBQ) were administered to 951 public school students in grades 6 through 12.

One eleventh grade male scored in the anorexic range on the EDI. The incidence of bulimia as measured by the EBQ was not statistically significant although 5.4% of boys and 6.9% of girls reported vomiting to control weight.

The study found that scores on the EDI significantly increased in the pathological direction with age for girls but not for boys and that boys at all grade levels had significantly lower evidence of weight concern and that boys were more likely to see themselves as underweight than girls. Dieting was found to be rampant among girls with 50% or more of all girls at all grade levels having dieted at some time and

75% of senior girls having dieted. A significant negative correlation was found between age of first menstruation and EDI scores, age of first diet and EDI scores, as well as among age of first menstruation, age of first diet and EDI scores. Individual sub-scales of the EDI were examined for differences across age groups and Drive for Thinness, Bulimia, Body Dissatisfaction, Interoceptive Awareness, and Perfectionism Scales were found to be significantly correlated with increasing grade levels but sub-scales Maturity Fears, Interpersonal Distrust and Ineffectiveness were not significantly correlated with grade level.

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Linda Kron Brundage

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CHAPTER I

INTRODUCTION

Many studies over the past twenty years have presented information that adolescent females are preoccupied with weight and dieting (Deisher, 1963; Nylander, 1971; Huenemann, Shapiro, Hampton & Mitchell, 1966). During this same period of time, articles about the eating disorders anorexia nervosa and bulimia have increased in both the popular press and professional journals suggesting that these conditions may be of epidemic proportions (Bemis, 1978; Crisp, Palmer & Kalucy, 1976; Jones, Fox, Babigian & Hutton, 1980; Kendell, Hall, Harley & Babigian, 1973).

Research suggests that about 50% of female adolescents consider themselves "too fat" and are periodically dieting. In a survey of 690 high school students, 48% of the girls and 28% of the boys stated they had weight problems (Deisher, 1963). In a more detailed study of 1,000 ninth graders which included a longitudinal study of 450 subjects over four years, Huenemann et al. (1966) found that 46-56% of the girls considered themselves "fat" and 22-24% of the boys considered themselves "fat" and in both groups, according to anatomical measurements, only 25% were classified by investigators as obese or somewhat obese. In addition, 60-70% of the girls wanted to lose weight. Nylander (1971) in a study of over 2,300 students found that 26% of fourteen year old girls and 50% of eighteen year old girls

described themselves as "fat" and for boys the percentages were 8 and 7 respectively.

There appears to be a fine line between normal adolescent concerns about body image, weight and dieting, and the more pathological conditions anorexia and bulimia. This study will examine what is currently considered a norm for adolescents, i.e., the preoccupation with weight concerns ("diet mentality") which may be the very thing that contributes to eating disorders in some vulnerable adolescent girls. Dramatic physiological changes in the context of socio-cultural dictates of how women must look, may be more than can be tolerated by some adolescents.

Through the use of a systematic assessment of eating attitudes and behaviors this study will attempt to establish that there is a diet mentality prevalent among adolescents which contributes to pathological eating behaviors. In addition, this study will examine and further establish a spectrum of eating attitudes and behavior which range from concern about calories, weight, figure and diet that appears normative in the population of adolescent females to the more pathological symptomatology of anorexia and bulimia. Differences between adolescent boys and girls regarding weight and diet concern will also be examined.

Rationale For the Study

A review of existing epidemiological research of the eating disorders anorexia and bulimia suggests a rise in the incidence of these disorders particularly among females. With few exceptions, very

little seems to be known about the incidence of eating disorders in the general population and no studies were found which attempted to measure eating disorders among male and female adolescents in the United States. Many authors (Crisp, 1977; Fries, 1974; Nylander, 1971; Swift & Stern, 1982) believe that what seems to be normative dieting for cosmetic purposes can lead to the disorders of anorexia and bulimia. This study filled this gap in existing knowledge of the breadth of eating attitudes and behaviors among adolescents.

The present study did not attempt to diagnose eating disorders but rather to increase the knowledge and understanding of eating attitudes and behaviors among adolescents for these reasons: 1) Although eating disorders are recognized as increasing in frequency in clinical populations, very little is known about the incidence in the general population and therefore little or nothing is being done in terms of prevention. 2) Through careful investigation of what is normative in terms of eating attitudes and behaviors, deviant behaviors can be better understood. 3) Intervention can be more appropriate and timely if a thorough understanding of adolescent attitudes toward food and eating is available.

Definitions of Anorexia and Bulimia

Anorexia Nervosa was first recognized as a clinical entity by Gull in England and Laseque in France 100 years ago (Bruch, 1973). Gull is credited with naming the syndrome, Anorexia Nervosa, which technically means "lack of appetite," and although the name for the syndrome has

remained the same, it is generally recognized that "denial of appetite" would more accurately reflect the syndrome (Bruch, 1973; Crisp, 1980; Slade, 1982).

Feighner, Robins, Guze, Woodruff, Winokur and Munoz (1972) developed the widely recognized and used quantitative operational criteria of anorexia nervosa which includes: age of onset prior to age 25, loss of 25% of original body weight, "a distorted, implacable attitude towards eating, food and weight that overrides hunger, admonitions, reassurance and threats," no known medical causes of the weight loss, no other known psychiatric disorder--particularly primary affective disorder, schizophrenia, obsessive-compulsive or phobic neurosis--that could better explain the symptom (p. 61). In addition, the Feighner et al. criteria require that at least two of the following be present: amenorrhea, lanugo (downy body hair), bradycardia (resting pulse less than 60), overactivity, episodes of bulimia (gorging) and self-induced vomiting. Garfinkel, Moldofsky and Garner (1980) agreed with the Feighner et al. (1972) criteria for anorexia nervosa, but with exceptions. They reported treating women who met all the criteria mentioned above, but who had the first onset of anorexia after age 25. Weight loss may not be greater than 25% of original body weight if a person is relatively thin or still growing at the onset of the illness. They held that without a loss of 25% body weight the diagnosis of anorexia would still be accurate if all other conditions were met.

Bulimia as a syndrome has much more recently begun to receive attention (Casper, 1983). Technically, bulimia means "voracious appetite" and until recently was identified either as a symptom which

might be part of anorexia nervosa or as a symptom of obesity. Over the last twenty years, bulimia has come to the attention of medical and mental health professionals among normal weight women. Boskind-Lodahl (1976) coined the term bulimarexia to describe women who alternately binge and purge. Bruch (1973) described what she called thin fat people: people who would quite possibly be obese if they did not go to great lengths including purges and fasts to remain slender.

Due to the current lack of research, which might discriminate between psychological concomitants and causes of bulimia, there seems to be much disagreement as to whether or not bulimia represents a discrete eating disorder or is a symptom of either obesity or anorexia. The Diagnostic and Statistical Manual of Mental Disorders (DSM III, American Psychiatric Association, 1980) has included bulimia as an independent eating disorder with the following diagnostic criteria:

1. Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete period, usually less than two hours).
2. At least three of the following:
 - a) Consumption of high-caloric, easily ingested food during a binge;
 - b) Inconspicuous eating during a binge;
 - c) Termination of such eating episodes by abdominal pain, sleep, social interruption, or self-induced vomiting;
 - d) Repeated attempts to lose weight by severely restrictive diets, self-induced vomiting or use of

cathartics or diuretics;

- e) Frequent weight fluctuation greater than ten pounds due to alternating binges and fasts.
- 3. Awareness that the eating pattern is abnormal and fear of not being able to stop eating voluntarily.
- 4. Depressed mood and self-deprecating thoughts following eating binges.
- 5. The bulimic episodes are not due to anorexia or any known physical disorder (pp. 70-71).

Research Questions

This study was designed to answer three major questions:

- 1. Does a spectrum of eating attitudes and behaviors exist among adolescent girls which ranges from widespread weight and diet concern to the psychological conditions of anorexia and bulimia?
- 2. Is there a relationship between early weight and diet concern and later psychopathology of anorexia and bulimia for some adolescents?
- 3. What are the differences between boys and girls regarding eating attitudes and behaviors?

Organization of the Study

In order to answer the three major research questions, a review of the literature will be presented. From the literature, research hypotheses pertinent to the major questions will be drawn and appropriate statistical methods for analyzing the data will be presented. The procedure for gathering the data will be outlined followed by the statistical analysis done with the data. The study will conclude with the findings, a discussion of the findings, implications for the findings and suggestions for future research.

CHAPTER II

REVIEW OF THE LITERATURE

Epidemiology of Anorexia and Bulimia

Once considered rare, the reported incidence of anorexia nervosa is increasing. There is some question, however, as to whether this represents an actual increase. Schwartz, Thompson and Johnson (1982) noted that it is possible that the increase is more apparent than real due to better recordkeeping and reporting, an absolute increase in the number of adolescents, an increase in interest by both professionals and lay persons, and individuals and centers who treat eating disorders may confuse referrals due to reputation with an increase in incidence. Although Schwartz et al. (1982) presented these possibilities, they reviewed considerable evidence that anorexia nervosa is in fact increasing in incidence.

Bruch (1978), citing her own clinical practice of many years, suggested "one might speak of an epidemic illness" (p. viii). Theander (1970), in a retrospective follow-up study which covered 30 years, found 2.4 cases per 1 million population but in the last ten year time period examined (1951-1961) the annual incidence was 4.5 cases, double that for the entire time span studied. Theander attributed the increase in incidence to an increase in awareness and an increase in reporting. Kendell et al. (1973) in a case register study of Northeast

Scotland, Camberwell (suburb of London), and Monroe County, New York, found that the number of cases reported per year was increasing. Jones et al. (1980) used the Monroe County, New York, Psychiatric Case register, as well as hospital records, to investigate the reported numbers of anorexia nervosa from 1960-1976. They found the numbers of newly diagnosed cases rose significantly among 15-24 year old females during the 1970s. The number of cases rose by 400% from .55 per 100,000 in 1960-1969 to 3.26 per 100,000 in 1970-1976. Jones et al. (1980) shed further light on the question of the epidemiology of anorexia by noting that the methods used in their study would identify only severely ill anorexics and would fail to identify the mild cases. The anorexic's resistance to seek help regarding her condition and the compatibility of anorexia nervosa with the prevailing cultural value of slimness in females were presented as the factors hindering detection of borderline cases.

Crisp, Palmer and Kalucy (1976), in an attempt to study the incidence of anorexia nervosa in the general population rather than rely on the report of clinical cases, surveyed nine populations of school girls. A case spotting method was used in this investigation whereby teachers and matrons of the schools identified girls thought or known to be anorexic. These cases were then verified either by contacting the consultant each student was referred to, or by a direct clinical interview with the girls. Only cases which could be personally confirmed according to strict diagnostic criteria were counted in the study. Although a difference in incidence was found between the independent schools and comprehensive schools, probably

implying a socio-economic class factor, Crisp et al. (1976) found one severe case in approximately every 200 girls. In girls over the age of sixteen, the prevalence was one in every 100 girls. They further emphasized that due to the rigorous criteria used for detection and the age band studied, the condition is likely to be more common than suggested by this investigation.

Due to recent recognition of bulimia as a syndrome (Casper, 1983) there have been very few epidemiological studies of it. A study, by Hawkins and Clement (1980), examined the binge eating aspect of bulimia alone, which falls short of studying the syndrome in DSM III terms. Strangler and Printz (1980) reviewed psychiatric diagnoses in a university psychiatric population using DSM III criteria and found that bulimia comprised 4.4% of the total sample of 500 students. They suggested that this incidence is probably not accurate because they only had access to diagnoses given at intake and other cases of bulimia might have been revealed in treatment.

Two major studies of the prevalence of bulimia in college populations have been conducted. Halmi, Falk and Schwartz (1981) surveyed 355 summer session students using a questionnaire which included items designed to obtain information concerning the behavioral symptoms of bulimia according to the DSM III criteria. All the major symptoms of bulimia were experienced by 13% of the respondents. Within the bulimic population, 87% were females (19% of the female population). Purging behavior was reported for 10% of the total respondent population.

Pyle, Mitchell, Eckert, Halvorson, Newman and Goff (1983)

administered a survey to 1,355 college freshmen and 37 bulimic female controls who were in treatment. Questions on the questionnaire were designed to measure the prevalence of bulimia using DSM III criteria. 7.8% of female students met the DSM III criteria for bulimia, plus the additional criterion of at least weekly binges.

In summary, anorexia and bulimia are receiving more attention in both the professional and lay press (Jones et al., 1980) and both are readily found in both psychiatric populations (Jones et al., 1980; Kendell et al., 1973; Pyle et al., 1981; Strangler and Printz, 1980) and in non-psychiatric, primarily student, populations (Crisp et al., 1976; Halmi et al., 1981; Pyle et al., 1983). Although they present cautions, Schwartz et al. (1982) say "there is considerable preliminary evidence ranging from clinical impressions to larger empirical studies which strongly support the idea that these eating disorders are indeed on the rise" (p. 24).

Socio-Cultural Influences on Eating Disorders

Research has shown an increasing frequency of eating disorders (Duddle, 1973; Falk and Schwartz, 1981; Halmi, Jones, Fox, Babigian and Hutton, 1980; Pyle, Mitchell, Eckert, Halvorson, Neuman and Goff, 1983) together with what appears at this time to be an over-representation of eating disorders among middle and upper social classes (Bruch, 1973; Crisp et al., 1976) and a much higher prevalence among females. These findings suggest that socio-cultural factors are critical elements in the development of eating disorders in some vulnerable girls and women

(Garfinkel and Garner, 1982). Schwartz et al. (1982) argued that social phenomena are the factors which can explain the increase in incidence of eating disorders.

In an attempt to examine cultural expectations of thinness in women, and pressure to diet, Garner, Garfinkel, Schwartz and Thompson (1980) collected data on the heights, weights and ages of both Playboy centerfold models and Miss America Pageant contestants and tabulated diet articles from popular women's magazines over a twenty-year period. They found a significant decline in weight for height in both centerfold women and pageant contestants; and since 1970, Miss America winners have weighed significantly less than other contestants. Diet articles, not advertisements and promotions, increased from a mean of 17.1 for the first decade studied to a mean of 29.6 for the second ten years, representing a significant increase in the number of diet articles in the last ten years. These findings are particularly noteworthy because the average female, under the age of 30, has become heavier in the last 20 years (Society of Actuaries, 1970 in Garner et al., 1980). These results point to a thinner ideal body shape for women with the diet articles suggesting the increased emphasis on weight reduction to achieve the ideal form.

Chernin (1981) in The Obsession: Reflections on the Tyranny of Slenderness assembled the following:

Fact: During the 1960s Marilyn Monroe stood for the ideal in feminine beauty. Now Christine Olman represents the ideal.

Fact: During the 1960s anorexia nervosa began to be a widespread social disease among women.

Fact: During the late 1960s and early 1970s bulimarexia began to be observed as a condition among women.

Fact: During the 1960s Weight Watchers opened their doors. In 1965 Diet Workshop appeared, in 1960s Over-Eaters Anonymous, in 1966 Why Weight, in 1968 Weight Losers Institute, in 1969 Lean Line.

Fact: During the 1960s the feminist movement began to emerge, asserting woman's right to authority, development, dignity, liberation and above all, power (p. 99).

With her observations, Chernin indicated the changes in norms over time and the potential conflict between the ideal and what is, that may arise from these changes. For many this conflict may take on the appearance of an eating disorder. This conflict is also presented by Boskind-Lodahl (1976), Bruch (1978), and Palazzoli (1974).

Palazzoli (1974) in a discussion of the contradictory roles of women, cites the changes of roles from confinement in the home in the role of wife and mother to a greater involvement in the world of careers. At the same time young women are being told to do and be more in terms of roles, they are also told to be slimmer and traditionally fashionable. Wooley and Wooley (1980) reviewing cultural pressures to be slim or reduce found that stigmas became attached to the obese by children of very young ages. Children ages 6-10 characterized endomorphic silhouettes in negative terms such as "dirty, cheats, argues, forgets, lazy, lies, mean, ugly, stupid, naughty, sad and lonely" (Staffieri, 1967, 1972). When contrasted with handicapped children, both children and adults preferred greater social distance

from obese children (Goodman, Dornbusch, Richardson and Hastorf, 1963; Mathews and Westie, 1966; Richardson, Goodman Hastorf and Dornbush, 1961). Wooley and Wooley (1980) concluded that these studies document the negative social prejudice toward the obese and point to possible social origins of self-hatred. These conclusions also contribute to understanding the diet-mentality in today's society.

In the studies cited above, young girls and boys were quite similar in their attitudes toward themselves and others in terms of body image. Beginning with adolescence, however, females judged their own bodies much more harshly than males judged their own bodies. Huenemann et al. (1971) found 63-70% of the girls studied were dissatisfied with their bodies. Clifford (1971) found females ages 11-19 more dissatisfied with their bodies than were male adolescents. Boys tended more often than girls to equate weight and size with virility and strength and wanted to gain weight (Huenemann et al., 1971).

The pressure to be slim was found clearly to be a risk factor in the development of anorexia nervosa in a study of models and dancers by Garner and Garfinkel (1980). In these groups, who by career choice must focus attention on their shape, 7% were found to be anorexic. In the discussion of these findings, Garner and Garfinkel suggested that since the highest incidence was found among students in the most competitive school, perhaps pressure to be thin in a competitive setting may be the environment most likely to lead to the expression of anorexia in some vulnerable adolescents.

Crisp (1977, 1980, 1981) proposed that anorexia nervosa and what

he referred to as the abnormal normal weight control syndrome (1981) and others called bulimia, emerge from the biological processes of puberty. Crisp (1980) concluded that as an adolescent girl begins to gain weight and to develop more rounded breasts and buttocks, she begins to "feel fat" (Nylander, 1971) and may attempt carbohydrate restriction to control or eliminate plumpness (Crisp, 1980). Crisp asserted that "the primary experiential behavioral determinant of the condition is rooted in the adolescent concern, usually female, about body shape, fatness and weight" (p. 77). In an in-depth, interview study of adolescent girls not in treatment, Rosenbaum (1979) found that the reactions of her sample to the biological changes of puberty and body image were comparable to girls in treatment (Rosenbaum, 1977) but were of a lesser magnitude.

Schwartz et al. (1982) presented a compelling argument for a risk factor model for anorexia and bulimia which encompasses psychological factors as well as socio-cultural forces which might predispose one to eating disorders. They sought to answer the question of how current culture might influence the psychology of eating disorders. They suggested that eating disorders as psychiatric symptoms represent forms of life adaptations which make a psychological statement. Cultural elements determine both the coping and the distress signaling value of a symptom or set of symptoms. The "relentless pursuit of thinness" (Palazzoli, 1974) central to anorexia nervosa also represents a "caricature" of what is currently in vogue as a standard of beauty. Anorexia has been called by Crisp (1974) a "fat phobia" which seems to describe accurately the need anorexics have to deny hunger and avoid

weight, which symbolizes many negative traits in our culture.

According to Schwartz et al. (1982), the emaciation which characterizes anorexia denies the bulimic urges and the symptoms take the form of the widely acceptable practices of dietary and weight consciousness. Thus, the symptoms both signal distress and symbolize the underlying impulse or wish. The shape and adaptive value of psychological symptoms is affected by the social-cultural milieu and therefore more research of the cultural influences must be conducted, concluded Schwartz et al.

Nylander (1971) and Crisp et al. (1976) conducted studies of the type suggested by Schwartz et al. (1982). Although Nylander and Crisp studied populations of adolescents which might be considered at risk for eating disorders due to cultural forces and peer pressure, these studies were done in Sweden and England, and Crisp's rigorous adherence to Feighner et al. (1972) criteria limited his contribution in terms of sub-clinical cases. Thompson and Schwartz (1981) investigated eating behaviors and attitudes among an otherwise normal college female population. They divided their sample of college students into two groups: "anorexic-like" and "no-problem" and compared these groups to anorexics who met Feighner et al. (1972) diagnostic criteria. Eating disorder pathology was similar in both the anorexic group and the "anorexic-like" group whose members were within 10% of weight for height and age, and only one woman was in any form of treatment. They found that 58% of primary anorexics and 52% of the "Anorexic-like" group habitually binged; 50% of anorexics practiced self-induced vomiting as a method of weight control. Dieting was found to be so common and constant that they found it impossible to rate, and there

was no significance among all groups for age of first diet.

Button and Whitehouse (1981) administered the Eating Attitudes Test (Garner and Garfinkel, 1979) to 578 college students, 446 females and 132 males, and compared the scores of this non-clinical group to a control group of clinically diagnosed anorexics. They found 6.3% of their sample scoring in the anorexic range on the EAT. This figure is consistent with the Crisp et al. (1976) finding of 1 in 100 since one of the 6.3% was found through a clinical interview to meet the Feighner et al. (1972) criteria and two met Dally's (1969) criteria. However, twenty-three of the subjects manifested several symptoms of anorexia nervosa. Thirty-nine percent of the high scoring group indulged in self-induced vomiting which did not differ significantly from the anorexia control group. Button and Whitehouse (1981) concluded that many young females have a preoccupation with weight and exhibit behaviors associated with anorexia nervosa. They chose the term "subclinical anorexia nervosa" in an attempt to describe these young women and note that this group includes those with "bulimia nervosa" (Russell, 1979) or "dietary chaos syndrome" (Palmer, 1979). In addition, Button and Whitehouse (1981) found that most of the women in their "sub-clinical" group had begun dieting for cosmetic reasons and had subsequently developed severe problems with dieting and weight which for some culminated in anorexia nervosa. Button and Whitehouse (1981) like Schwartz et al. (1982) called for more research to be done in a general population and they suggested that clinical cases may be only the "tip of the iceberg with respect to weight concern among young women" (p. 514).

A thorough review of the literature to date does not reveal any reported studies of the general population of public school students in the United States regarding eating disorders. This study attempted to fill that gap.

The Spectrum Theory of Eating Disorders

Swift and Stern (1982) described anorexia nervosa as a "spectrum disorder" and presented a model which they call "A spectrum of Anorexic Concern" (p. 22). Group A, the largest group in their model, consists of female adolescents generally dissatisfied with their weight and shape. This group is analogous to the groups described by Nylander (1971), Huenemann et al. (1966) and Rosenbaum (1979) and may be normative in the female adolescent population. The second group or Group B as described by Swift and Stern (1982) is characterized as "restrained eaters" (Herman and Polivy, 1980) and although this group is smaller than the first group, Swift and Stern (1982) believed it includes a substantial number of adolescents. They suggested that this group probably encompasses the syndrome of bulimia as well as regular and chronic dieters. The third group in the spectrum is that group of females they referred to as "mild" anorexics, who can successfully be treated on an outpatient basis. Group D is fourth and is composed of classical hospitalized anorexics which meet the Feighner et al. (1972) criteria (Swift and Stern, 1982, p. 22-23).

In a study focusing on secondary amenorrhoea, Fries (1974), proposed a "continuum hypothesis" in which he described "dieting for

cosmetic reasons, a neurotic fixation on dieting, anorectic behavior and anorexia nervosa" (p. 31). Previously he had characterized this continuum in Fries and Nellius (1973) as "a fully developed picture of anorexia nervosa may be considered as the final stage after a continuous change from conscious, voluntary dieting towards a more automatic, uncontrollable behavior with loss of insight and defect {sic} body-image perceptions" (in Fries, 1974).

The previously discussed studies by Schwartz and Thompson (1981) and Button and Whitehouse (1981) also suggested a spectrum or continuum of eating concerns among women. This study attempted to further delineate a spectrum of eating attitudes and behaviors within a non-clinical population of adolescents.

CHAPTER III

DESIGN AND METHODOLOGY

Subjects

A non-clinical population was chosen for this study because although a great deal is known about anorexia nervosa from studying clinical populations, and epidemiological studies have recently been done regarding bulimia, there is no current research of eating attitudes and behaviors of adolescents among a non-clinical sample.

Public school adolescents in grades 6 through 12 were chosen for this study because although the recognized onset of anorexia is 16-18 years of age (Garfinkel et al., 1980) and the onset of bulimia may be later (Garfinkel and Garner, 1982), evidence suggests that these disorders have roots in earlier attitudes and behaviors.

Nine hundred fifty-one students (461 boys and 490 girls) completed the self-report questionnaires. The potential pool of respondents in grades 6 through 12 in this Michigan school district was 1155. A check of absenteeism for the day the questionnaires were administered found 93 students or 8% absent, a rate which is within normal limits for attendance at this school during the winter months. In addition to absent students, twenty-one students, primarily eleventh and twelfth graders, attend the Intermediate District Career Center and were not in the building at the time of the survey. A total of ninety students

either declined to participate, returned invalid answer sheets or were otherwise unavailable, leaving 951 usable answer sheets representing 82% of the potential pool.

According to the 1980 Census of Population, persons in this school district do not differ markedly from persons in Michigan or the United States. The population of persons living in this district may be slightly younger with 33.2% under 18 years of age and 6.8% over 65, compared to 28.1% and 29.7% under 18 in the United States and Michigan respectively and 11.3% and 9.8% over 65 in the United States and Michigan. Fewer blacks reside in this district than is the case in the United States or in Michigan: .03% compared to 17.7% in the United States and 12.9% in Michigan. The percentage of people of Spanish origin is about the same for the school district (1.5%) and Michigan (1.8%) but somewhat less than people of Spanish origin in the U.S. (6.4%).

People residing in families in this district have a somewhat higher median family income (\$26,127) than do families in Michigan (\$22,107) and the United States (\$20,171). Related to this report of median income are the percentages of families below poverty. In the district studied, 4% are below poverty, in Michigan 8.7% and in the United States 12.5% are below poverty.

Educational level in the school district for people 25 years of age or older does not differ much from people in Michigan or the U.S.: the census reports percentages of 49.2, 38 and 37.9 respectively for four years of high school. In this district 10.9% have four or more years of college compared to 14.3% in Michigan and 17.7% in the U.S.

According to these figures slightly more people have high school educations in this district and slightly fewer have college degrees than in Michigan and the U.S.

In conclusion, this district seems to be wealthier, not as highly educated and to have fewer blacks compared to Michigan and the United States. Table 1 presents the demographic comparisons.

Instruments

The two instruments chosen for this study were the Eating Behavior Questionnaire and the Eating Disorder Inventory (EDI) (Garner, Olmstead and Polivy, 1983).

The Eating Behaviors Questionnaire (see Appendix A) is an inventory which includes both demographic variables and questions about eating behaviors. It is a modification of the one used by Halmi et al. (1981) entitled Binge-Eating Questionnaire which was originally conceived to measure the prevalence of bulimia. Several questions were added to assess demographic variables but with the exception of the addition of a question regarding age of first binge, the change in questions regarding eating behaviors was primarily one of format from fill in the blank to multiple choice.

The Eating Disorder Inventory (EDI) (Garner et al., 1983) is a 64-item, self-report, multiscale measure designed for the assessment of psychological characteristics and behaviors relevant to anorexia nervosa and bulimia (see Appendix B). It utilizes a six point, forced

Table 1
General Demographic Characteristics, 1980

Percent of Population					
	Black	Spanish Origin	Under 18 Years	18-64 Years	65 Years and Over
<hr/>					
United States (N) 226,545,805	17.7%	6.4%	28.1%	60.6%	11.3%
Michigan (N) 9,262,078	12.9%	1.8%	29.7%	60.4%	9.8%
District Studies (N) 9,570	0.3%	1.5%	33.2%	58.9%	6.8%
<hr/>					
Income Variables					
	Median Family Income	Percent of Families Below Poverty			
<hr/>					
United States	\$20,171	12.5%			
Michigan	\$22,107	8.7%			
District Studied	\$26,127	4.0%			
<hr/>					
Percent of Population Education					
	Elementary 0-8	High School 1-3 yrs 4 yrs		College 1-3 yrs 4+ yrs	
<hr/>					
United States	7.1%	13.3%	37.9%	15.3%	17.7%
Michigan	12.9%	16.9%	38 %	15.7%	14.3%
District Studied	8.9%	15.9%	49.2%	14.8%	10.9%

choice Likert scale. Garner (personal communication, June 13, 1983) encourages use of the EDI for research purposes and it is not copyrighted.

EDI items were generated by clinicians familiar with the research literature on anorexia and bulimia and who had treatment experience with anorexics. The EDI consists of the following eight subscales:

Drive for Thinness--indicates excessive concern with dieting, preoccupation with weight, and entrenchment in an extreme pursuit of thinness.

Bulimia--indicates the tendency toward episodes of uncontrollable over-eating (binging) and may be followed by the impulse to engage in self-induced vomiting.

Body Dissatisfaction--reflects the belief that specific parts of the body associated with shape change or increased "fatness" at puberty are too large (e.g. hip, thighs, buttocks).

Ineffectiveness--assesses feelings of general inadequacy, insecurity, worthlessness and the feeling of not being in control of one's life.

Perfectionism--indicates excessive personal expectations for superior achievement.

Interpersonal Distrust--reflects a sense of alienation and a general reluctance to form close relationships. . .relates to an inability to form attachments or feel comfortable expressing emotions toward others.

Interoceptive Awareness--reflects one's lack of confidence in recognizing and accurately identifying emotions and sensations of

hunger or satiety.

Maturity Fears--measures one's wish to retreat to the security of the preadolescent years because of the overwhelming demands of adulthood (Garner et al, 1983, pp. 17-18).

The subscales Drive for Thinness, Bulimia and Body Dissatisfaction assess attitudes and behaviors regarding eating and body shape and may exist in groups of dieters as well as being central areas of disturbance in anorexia nervosa. The remaining subscales (Ineffectiveness, Interpersonal Distrust, Interoceptive Awareness, Perfectionism and Maturity Fears) measure traits considered "as fundamental aspects of the psychopathology of anorexia nervosa" (Garner et al., 1983, p. 29).

Reliability was established above .80 (Cronbach's Alpha) for all subscales and several indices of validity are presented by Garner et al. Using an alpha level of $p < 0.001$ to avoid a Type 1 Error, significant convergent and discriminant validity were demonstrated for subscales and other psychometric instruments. Criterion validity was established using correlation of subscale scores and clinicians' ratings using a significance level of $p < 0.001$ which determined all correlations to be significant. Congruence between clinicians' ratings and subscale scores, demonstration of convergent and discriminant validity, and the ability of the instrument to differentiate between 113 anorexic and 577 female controls were offered as evidence of construct validity. Group differences among normal weight bulimic women, obese, formerly obese and a male comparison group were also reported (Garner et al., 1983).

Prior to administration of these instruments for this study each

instrument was examined for readability. Both The Flesch Reading Ease Formula and The Fry Readability Graph (Singer & Donlan, 1980) were used to determine that both surveys were appropriate for use with sixth through twelfth graders. In addition to these formal procedures, the building principals involved determined that the reading levels were appropriate for their students.

Research Questions

The three major research questions of this study were addressed in two parts. The first part of the study concerned the actual incidence of eating disorders in the sample studied. The second part of the study involved the specific research hypotheses designed to answer the three major questions of the study.

Major Research Questions

1. Does a spectrum of eating attitudes and behaviors exist among adolescent girls which ranges from widespread weight and diet concern to the psychological conditions of anorexia and bulimia?
2. Is there a relationship between early weight and diet concern and later psychopathology of anorexia and bulimia for some adolescents?
3. What are the differences between boys and girls regarding eating attitudes and behaviors?

Incidence of Anorexia and Bulimia

No predictions were made regarding what the incidence of anorexia and bulimia might be for this sample. Rather, this study attempted to determine through the use of self-report data what the incidence of both anorexia and bulimia is in the sample studied.

Hypotheses

H₁: There will be an increase with age in eating attitudes and behaviors in the pathological direction for females but not for males.

H₂: At each grade level males will have a lower evidence of weight and diet concern than females.

H₃: At each grade level males will be more likely to want to gain weight than females.

H₄: At least 50% of all females at each level will have been on a diet.

H₅: At least 50% of all females will show evidence of being dissatisfied with their body.

H₆: At least 75% of all female twelfth graders will have been on a diet.

H₇: There is a relationship between age of first menses and eating disorders.

It is predicted that girls who menstruate at a young age will be more likely to have an eating disorder.

H₈: There is a relationship between age of first diet and eating disorders for females.

It is predicted that girls who diet at a young age are more likely to have an eating disorder.

H₉: There is a relationship among age of first menses, dieting at a young age and eating disorders.

It is predicted that girls who menstruate at a young age and engage in their first diet at a young age are more likely to have an eating disorder.

H_{10a}: There will be a significant increase in Drive for Thinness, Bulimia and Body Dissatisfaction among girls with increasing grade levels.

H_{10b}: There will be no significant increase in Interoceptive Awareness, Perfectionism, Ineffectiveness, Interpersonal Distrust and Maturity Fears among girls with increasing grade levels.

Data Collection Procedures

The Eating Behaviors Questionnaire and the Eating Disorder Inventory were administered in school district classes after approval by both the Western Michigan University Institutional Review Board for human subjects and the individual school district's Human Subjects Review Committee and with the cooperation and approval of individual building administrators (see Appendix B).

The administration of the instruments was done by individual classroom teachers who had been briefed regarding instructions by the researcher. Instructions to the faculty included a brief discussion of the study as well as instructions to them to read a statement to the students prior to administration of the instruments stating the student's right to refuse to participate (see Appendix B).

The instruments were administered to all students during their first hour class at one time and without prior notice in order to avoid collusion or intentional absenteeism. Following administration in each first hour class, the answer sheets were placed by the students in an envelope addressed to the researcher. Students were assured that only the researcher would have access to their answer sheets.

Data Analysis

The primary statistical analyses employed in this research were Chi-square (χ^2), Pearson product-moment correlation coefficient (r), analysis of variance (ANOVA), multiple correlation (R) and Student's t .

A .05 confidence level was used to determine significance.

The incidence of anorexia in this sample of adolescents was determined by comparing full scale EDI scores to summed mean subscale scores from norm tables found in the Eating Disorder Inventory Manual (Garner and Olmsted, 1984). Incidence of bulimia was measured by determining the number of students who answered yes to questions 30 through 34 of the Eating Behaviors Questionnaire (see Appendix A). These questions were designed to operationalize DSM III criteria for bulimia (Halmi et al., 1981). The number of students answering "yes" to questions 30 - 34 were then analyzed using a Chi-square to determine if these were significantly greater than would be found by chance. In addition, the proportions of students who have ever vomited after eating too much (question 35) and/or who use vomiting to control weight (question 41) was reported.

ANOVA was used with the Eating Disorder Inventory full scale score to determine whether eating attitudes and behavior increased with age in the pathological direction for girls but not for boys. In addition, a one-tailed t test was used to test the significance of increase as well as a Pearson r between EDI scores and grade levels.

ANOVA was also used to test for differences between means for males and females on the Body Dissatisfaction Scale of the EDI.

Chi-square (X²) was used to compare boys and girls in self-classified weight categories to determine if boys are more likely to view themselves as underweight than are girls.

An inspection of proportions was used to determine if at least 50% of all girls at each grade level have been on a diet, if at least 50%

of all females showed evidence of being dissatisfied with their body and if at least 75% of all twelfth grade girls have been on a diet.

Whether a relationship exists between age of menses and eating disorders was determined by using a Pearson r on age of first menses and EDI full scale scores.

Age of first diet and EDI full scale scores were analyzed using a Pearson r to determine if a relationship exists between these variables.

A multiple correlation (R) was used to determine if a relationship exists among age for first menses, age of first diet and EDI full scale scores.

A Pearson r was used to determine if a significant relationship exists between grade levels and mean scores on each subscale of the EDI.

CHAPTER IV

REPORT OF FINDINGS

Introduction

The report of the analysis of the data collected in this study is presented in this Chapter. The major purposes of this study were to examine the eating attitudes and behaviors of adolescents to determine if a spectrum of concerns exists among adolescents, and to determine whether or not behaviors begun at a young age could contribute to later psychopathological eating attitudes and behaviors. In addition, the differences regarding eating attitudes and behaviors between male and female adolescents was examined.

The results of the study will be presented in two parts. First, incidence of anorexia and bulimia and how these were determined will be presented. Following the report of incidence will be the results of the statistical treatments of the data presented according to each research hypothesis.

Findings

Incidence of Anorexia and Bulimia

One eleventh grade boy had a score on the Eating Disorder Inventory that was at or above the mean EDI score for anorexics (Garner

and Olmsted, 1984). Respondent scores on the EDI were also compared to plus one standard deviation of mean EDI scores for high school girls to determine how this group of students might differ from the norm population. Using this procedure, 1.6% of the girls and 0.7% of the boys had scores which exceeded one standard deviation above the mean. See Table 2 for these comparisons.

Table 2
Scores at or Above 72* on Eating Disorder Inventory

Grade	Scores at or above 72*			
	Male		Female	
	N	%	N	%
6	1	2	--	--
7	1	2.2	--	--
8	--	--	--	--
9	--	--	1	1.4
10	--	--	2	2.9
11	1**	1.7	1	1.3
12	--	--	1	1.1
Total	3	0.79	5	1.16

*72 = 1 sd above mean of EDI scores for high school girls.

**Raw score = 99, next highest was 61.

The incidence of bulimia was measured by determining how many students replied "yes" to questions 30 - 34 of the Eating Behaviors Questionnaire. Four boys, nine girls and 13 total students representing 0.9% of boys, 1.8% of girls and 1.37% of the total answered yes to these operationalized criteria of bulimia. Using grade and yes-no responses to all five questions, a Chi-square 6.34 (6 df) was found for boys and 8.597 (6 df) was found for girls neither one of which is significant at the p .05 level.

As reported in Table 3 girls reported a higher incidence of vomiting than did boys with the exception of seventh grade. A total of 5.4% of the boys and 6.9% of the girls reported using vomiting to control their weight and 7.9% of the boys and 15.4% of the girls reported vomiting after eating too much, representing 10.5% of the population studied.

Table 3
Vomiting Behavior of Adolescents, Grades 6-12

Yes response to: Have you ever made yourself vomit after eating too much? (Question 35)				
Grade	Males		Females	
	N	%	N	%
6	8	14	6	10.7
7	5	8.3	2	2.7
8	3	4.2	5	8.3
9	3	4.2	15	17.9
10	5	8.3	10	13.0
11	5	7.2	18	21.7
12	2	2.8	8	14.0
Total	31	7.9	64	15.4

Use of Vomiting to Control Weight (Question 41)

Grade	Males		Females	
	N	%	N	%
6	2	3.5	3	5.4
7	3	5.1	2	2.8
8	3	4.2	3	5.1
9	4	5.6	9	10.8
10	4	6.6	5	6.5
11	5	7.1	6	7.2
12	4	5.6	6	10.6
Total	25	5.4	34	6.9

Hypotheses

H_1 : There will be an increase with age in eating attitudes and behaviors in the pathological direction for females but not for males.

This hypothesis was tested by computing an Analysis of Variance with the Eating Disorder Inventory full scale mean scores by grade level and sex. The mean scores for the EDI are presented in Table 4.

Table 4
Eating Disorder Inventory Mean Scores by Grade and Sex

Sex	Grade						
	6	7	8	9	10	11	12
Males							
N	50	45	54	61	50	59	59
\bar{x}	34.92	35.16	33.83	29.56	34.78	36.05	32.32
Females							
N	49	60	47	71	70	76	57
\bar{x}	35.59	34.97	39.60	41.75	40.60	43.46	40.23

As indicated in Table 5, the scores on the Eating Disorder Inventory increased in the pathological direction for girls but not for boys, $F(1,6) = 3.806$, significant at the $p < .001$. A graph of these results further illustrates this difference (See Figure 1).

Table 5
Analysis of Variance of the Eating Disorder
Inventory Full Scale Score by Grade Level and Sex

Source of Variation	DF	MS	F
Main effects			
Sex	1	7227.32	52.935*
Grade	6	368.274	2.697***
2 way interactions			
Sex, grade	6	519.657	3.806**

Note: N = Boys 378, Girls 430, Total 808

* $p < .0001$ ** $p < .001$ *** $p < .02$

Following an ANOVA which tested for differences between means on the EDI full scale scores for boys and girls by grade, t tests were computed to determine if the differences found using ANOVA were due to an increase in scores for girls but not for boys. To perform the t test, grades 6, 7 and 8 were pooled and the pooled mean compared to the pooled mean of grades 9, 10, 11 and 12. These groupings were utilized as a means of contrasting younger and older students. These t tests found an increase in EDI scores significant at the $p < .001$ level for girls but no significant increase for boys.

In addition, when a Pearson r is used to test for a relationship between EDI full scale scores and grade levels, a correlation of $+.19$ is found for girls which is significantly different from a zero order

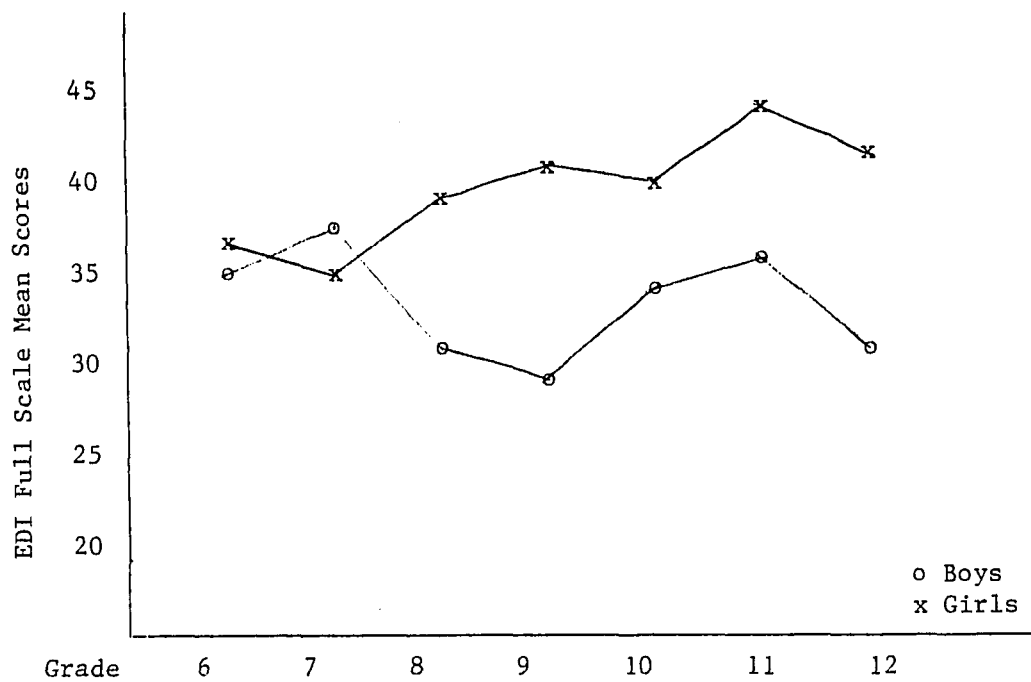


Figure 1. Eating Disorder Inventory Mean Scores by Grade and Sex

correlation at the $p < .001$ level. A significant correlation between EDI scores and grade was not found for boys. H_1 was not rejected since scores on the EDI increase with age in the pathological direction for girls but not for boys.

H_2 : At all grade levels males will have a lower evidence of weight and diet concern than females.

ANOVA was used to test for differences between means for males and females on the Body Dissatisfaction Scale of the EDI (see Table 6). As Table 7 indicates, differences between mean scores on the Body Dissatisfaction Scale are significant at $p < 0.05$. Figure 2 presents a graph of the differences between mean scores on the Body Dissatisfaction Scale for boys and girls by grade. H_2 was not rejected because it was demonstrated that boys have less concern with weight and diet than do girls.

Table 6
Eating Disorder Inventory Body Dissatisfaction
Scale Mean Scores by Grade and Sex

Sex	Grade						
	6	7	8	9	10	11	12
Males							
N	53	48	58	64	53	63	64
x	5.13	4.77	4.76	3.94	5.57	5.33	4.45
Females							
N	50	65	51	75	71	79	57
x	5.82	5.82	6.55	6.27	6.06	7.13	6.63

Table 7
Analysis of Variance of the EDI Body
Dissatisfaction Scale by Grade and Sex

Source of Variation	DF	MS	F
Main Effects			
Grade	1	488.422	68.451*
Sex	6	17.687	2.479**
2 Way Interactions			
Sex, grade	6	15.512	2.174***

Note: N = Boys, Girls = 448, Total 951

* $p < .0001$ ** $p < .03$ *** $p < .05$

H_3 : At all grade levels males will be more likely to classify themselves as underweight than females.

Chi-square (χ^2) was used to compare boys and girls in self-classified weight categories. χ^2 was calculated comparing the total number of boys with the total number of girls rather than on a grade basis to avoid expected cell frequencies of less than 5 (Siegel, 1956). There was a significant difference between boys and girls at the $p < .001$ level with boys being more likely to classify themselves as underweight and girls more likely to classify themselves as overweight (see Table 8). Neither boys nor girls classified themselves in the extreme categories of very underweight or very overweight at a rate any greater than would be expected by chance. H_3 was not rejected because boys were found to be more likely to view themselves as underweight than girls.

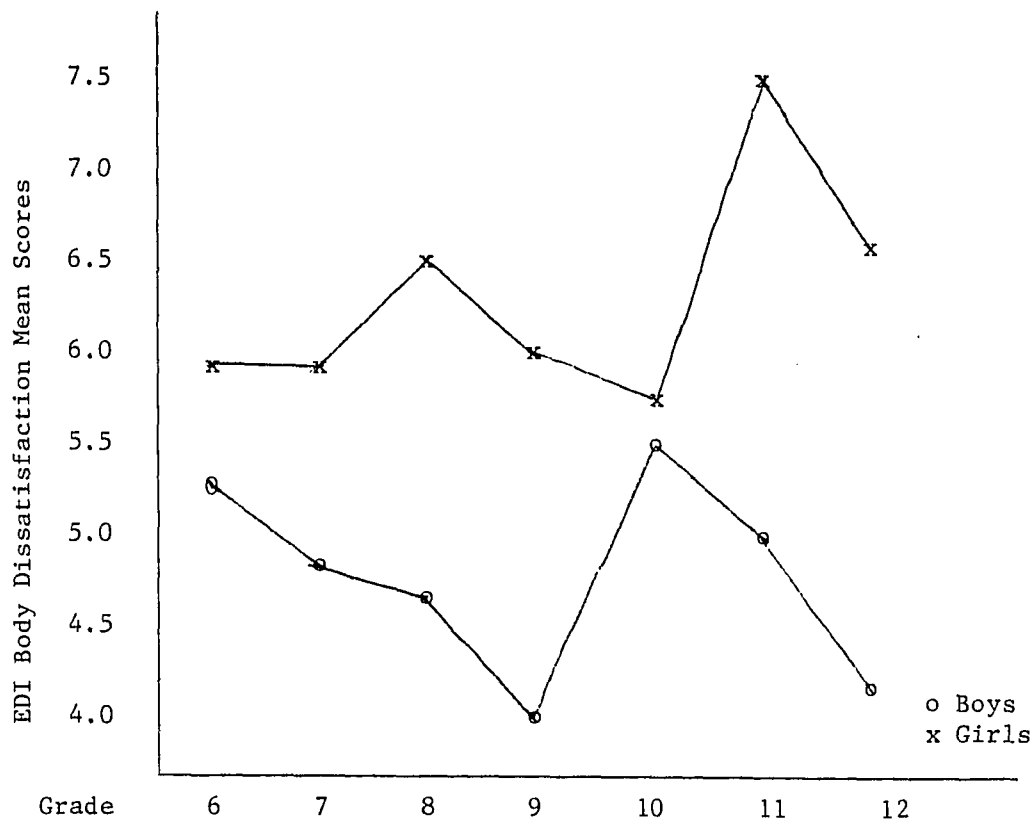


Figure 2. EDI Body Dissatisfaction Scale Mean Scores by Grade and Sex

Table 8
Chi-square Analysis of Self-classified
Weight Categories, Grades 6-12

	Boys	Girls	Total
Very Underweight	10	4	14
Underweight	61	30	91
Average (About right)	289	255	544
Overweight	83	177	260
Very Overweight	11	18	29
Total	454	484	938

$$\chi^2 (4, N = 938) = 50.03, p < .001$$

H_4 : At least 50% of all females at each level will have been on a diet.

Proportions were inspected to determine whether 50% of all females at each grade level had been on a diet. Percentages of responses to both questions 23 (age of first diet) and 26 (frequency of dieting in the past year) of the Eating Behaviors Questionnaire were inspected. Table 9 presents the percentage of responses to questions 23 and 26. With the exception of grade seven girls, at least 50% of the girls in all other grades said they had dieted at some time. For seventh grade girls 50.7% reported never having dieted. In response to question 26 which asked specifically about dieting in the last year, only 55.4% and 56.2% of girls in grades six and seven respectively reported not

Table 9
Dieting Behavior of Girls, Grades 6-12

How often have you gone on a diet in the last year? (Question 26)						
Grade	n	Never	1-5	5-10	More Than 10	Always Dieting
6	56	55.4	35.7	3.6	1.8	1.8
7	73	56.2	35.6	2.7		1.4
8	60	38.3	46.7	6.7		6.7
9	84	44.0	39.3	7.1	6.0	3.6
10	77	35.1	37.7	10.4	3.9	7.8
11	83	26.5	49.4	8.4	4.8	9.6
12	57	29.8	38.6	10.5	5.3	15.8

How old were you when you went on your first diet? (Question 23)											
Grade	n	10 or under	11	12	13	14	15	16	17	18	Never
6	56	26.8	23.2	1.8							48.2
7	73	4.1	16.4	20.5	4.1						50.7
8	60	1.7	15.0	33.3	16.7						33.3
9	84	3.6	3.6	8.3	32.1	7.1	2.4				41.7
10	77	1.3	2.6	13.0	15.6	16.9	10.4	2.6			33.8
11	83	1.2	3.6	4.8	18.1	15.7	26.5	7.2	2.4		20.5
12	57			3.5	14.1	12.3	19.3	17.5	5.3		22.8

Note: The values represent percentage of respondents by category.

dieting at all in the past year. See Table 9 for all percentages. H_4 is rejected because at least 50% of girls in all grades did not report dieting at some time. Grade seven girls reported 50.7% not ever dieting which left 49.3% having dieted.

H_5 : At least 50% of all females will show evidence of being dissatisfied with their body.

An inspection of proportions for question 19 of the Eating Behaviors Questionnaire found that girls in grades 6, 7 and 8 had percentages of 55.4, 69.9 and 55 respectively in the response category "average (about right)" to the question: In my opinion, I am now: Very underweight, underweight, average (about right), overweight and very overweight. Girls in grades 9-12 had percentages of less than 50% for the average or about right category. See Table 10 for all percentages for question 19. H_5 was rejected because over 50% of girls in grades six, seven, and eight responded that they were average or about right in weight.

H_6 : At least 75% of all female twelfth graders will have been on a diet.

In answer to question 80 (see Table 9) of the Eating Behaviors Questionnaire: How old were you when you went on your first diet? 22.8% of the twelfth grade girls responded "never". In addition, 29.8% of the twelfth grade girls responded "never" to question 83 (see Table

Table 10
Self-classified Weight Categories by Grade and Sex

Grade	n	Very Under-weight (%)	Under-weight (%)	Average (about right) (%)	Over-weight (%)	Very over-weight (%)
6 Boys	57	1.8	7	63.2	24.6	1.8
6 Girls	56	1.8	8.9	55.4	32.1	---
7 Boys	60	3.3	11.7	6.17	15.	8.3
7 Girls	73	---	4.1	69.9	19.2	1.4
8 Boys	71	---	15.5	66.2	16.9	---
8 Girls	60	---	3.3	55.0	35.0	6.7
9 Boys	72	1.4	18.1	65.0	13.9	1.4
9 Girls	84	1.2	9.5	47.6	46.9	4.8
10 Boys	60	6.7	11.7	55.0	21.7	3.3
10 Girls	77	---	6.5	49.4	40.3	2.6
11 Boys	69	1.4	13.0	58.0	21.7	2.9
11 Girls	83	2.4	2.4	41.0	49.4	4.8
12 Boys	72	1.4	13.9	68.1	13.9	---
12 Girls	57	8.8	49.1	36.8	5.3	---

Note: Values represent percentage of respondents by category.

7) which asked if they had been on a diet in the current year. H_6 was not rejected since over 75% of twelfth grade girls reported having dieted at some time. In addition, 70% reported dieting at sometime in the previous year.

H_7 : There is a relationship between age of first menses and eating disorders.

It was predicted that girls who menstruate at a young age would be more likely to have an eating disorder. This was measured using a Pearson r with the age of first menses and the full scale EDI score. These two variables were found to be negatively correlated ($-.187$) which is significantly different from a zero-order correlation at the $p < .001$ level. Therefore H_7 was not rejected.

H_8 : There is a relationship between age of the first diet and eating disorders for females.

It was predicted that girls who diet at a young age would be more likely to have an eating disorder. This was measured using a Pearson r with the age of first diet and full scale EDI scores. A correlation of $-.258$ was found which is significantly different from a zero-order correlation at the $p < .001$ level. Therefore H_8 was not rejected.

H_9 : There is a relationship between age of first menses, dieting at a young age, and eating disorders for girls.

It is predicted that girls who menstruate at a young age, and engage in their first diet at a young age, are more likely to have an

eating disorder. A Multiple Correlation (R) was used to determine if a negative relationship exists between age of first menses, age of first diet, and EDI total score. Using ages of first menses and first diet as independent variables and full scale EDI scores as the dependent variable, a multiple correlation of $-.296$ was found which is significant at the $p < .005$ level. (The Pearson r between age of first menses and age of first menses and age at first diet was $+.187$). H_9 was not rejected.

H_{10a} : There will be a significant increase in Drive for Thinness, Bulimia and Body Dissatisfaction among girls with increasing grade levels.

This hypothesis was tested using a series of Pearson Correlation Coefficients with individual scores on the EDI subscales and grade levels. Correlations significant at the $p < .05$ level were found between grade level and subscales Drive for Thinness ($+.12$), Bulimia ($+.31$) and Body Dissatisfaction ($+.13$) of the EDI. Therefore H_{10a} was not rejected.

H_{10b} : There will be no significant increase in Interoceptive Awareness, Perfectionism, Ineffectiveness, Interpersonal Distrust and Maturity Fears among girls with increasing grade levels.

Pearson Correlation Coefficients were also used to test for the significance of relationships between EDI subscales and grade level. Subscales Interoceptive Awareness and Perfectionism each correlated ($+.08$) with grade level which was significant at the $p < .05$ level.

Correlations for Maturity Fears (+.05), Interpersonal Distrust (+.03) and Ineffectiveness (+.03) were not significant at the $p < .05$ level. H_{10b} was rejected because statistically significant correlations were found between grade level and Interoceptive Awareness and Perfectionism which were not expected.

Summary

The findings of this study were reported in this chapter. The incidence of eating disorders found in this sample was reported first, followed by a report of the findings and data analysis of each research hypothesis.

Although the actual numbers are small, evidence of eating disorders in this non-clinical population was found.

Statistical significance was found for all of the research hypotheses with the exception of Hypothesis Four which predicted that at least 50% of girls at each grade would have been on a diet, Hypothesis Five which predicted that 50% of the girls at each grade would be dissatisfied with their body, and Hypothesis Ten b which predicted no increase with age on the EDI scales which measure psychological traits.

CHAPTER V

SUMMARY, DISCUSSION AND RECOMMENDATIONS FOR FURTHER STUDY

Review of the Study and Summary of Findings

This study was designed to explore questions about eating attitudes and behaviors among a non-clinical population of adolescents. Clinical cases of anorexia nervosa have been investigated and reported for some time and a great deal has been documented regarding eating attitudes and behaviors of active anorexics. In a similar way, though less extensively, bulimia has begun to be studied as a clinical entity. The present study investigated the relationship between the endemic adolescent concern with weight and diet and the possible development of the pathological conditions anorexia and bulimia.

The major questions of this study thus became: Does a spectrum of eating attitudes and behaviors exist among adolescent girls which ranges from widespread weight and diet concern to the psychological conditions of anorexia and bulimia? Is there a relationship between early weight and diet concern and later psychopathology of anorexia and bulimia for some adolescents? What are the differences between boys and girls regarding eating attitudes and behaviors which might further document the cultural influences on the development of eating disorders?

Based on the data gathered in this study the answers to the major

questions are: Yes, dieting and weight concern among adolescent girls form a spectrum ranging from endemic weight and diet concern to bulimia and anorexia. This study also demonstrates how this endemic concern of adolescent girls regarding their appearance is related to indicators of anorexia and bulimia. In addition, this study further underscores the differences between adolescent girls and boys regarding eating attitudes and behaviors.

The first research hypothesis of this study predicted that eating attitudes and behaviors would change in the pathological direction when students were compared according to age groups. This was in fact the case and is in keeping with a large body of research. Previously it has been shown that many patients develop anorexia nervosa in late teens or early twenties (Garfinkel et al., 1980). Jones et al. (1980) in their case register study found anorexia most common in the 15-24 year-old group. The present study surveyed students ranging in age from 11 through 18 and it was expected that older girls would exhibit more concern with weight and diet than do younger girls. Crisp (1981) concluded that concerns about weight and dieting are related to whether or not girls were pre or postmenarchal. Since fewer girls in the sixth grade group would be menstruating than in the older groups, change in the pathological direction was predicted and found for girls. Less than 10% of males are generally found to have eating disorders (Bemis, 1978; Jones et al., 1980) so it was predicted and found that there would be no increase in weight and diet concerns between age groups of boys.

It was predicted that mean scores on the EDI would not increase across groups for boys, but also that at all grade levels boys would

have lower evidence of weight and diet concern than girls and that boys would be more likely to view themselves as underweight than girls. All three of these predictions were confirmed as measured by this study. EDI full scale mean scores did not increase for boys with age, at all grade levels boys evidenced less weight and diet concern and boys were more likely than girls to see themselves as underweight. These findings suggests a socio-cultural difference between males and females in regard to eating attitudes and behaviors. In addition to a greater number of girls and women having eating disorders, adolescent boys are likely to equate weight and weight gain with strength and virility (Huenemann et al., 1966). Since this previous work suggested that boys saw weight in terms of strength and virility, which are generally viewed as positive characteristics, in this study it was predicted and found that boys who did not see themselves as average or about right would be more likely to classify themselves as underweight.

In an attempt to further delineate and quantify that a spectrum of eating concern exists among adolescent girls, it was predicted that at least 50% of all girls and at least 75% of all twelfth grade girls would have been on a diet, which was defined as changing eating behavior for the purpose of losing weight. Nearly 50% of all girls in this study were found to have dieted at some time and over 75% of twelfth grade girls had been on a diet. Thompson and Schwartz (1981) found dieting so prevalent in their study of college women that it was impossible to rate while Huenemann et al. (1966), found dieting incidence at about the same rate as predicted and found in this study. These particular results suggest that there may be a great many

adolescents who could be classified as "chronic dieters" (Wooley & Wooley, 1980) or who may organize their thinking, feelings and social lives around anorexic-like concerns (Thompson and Schwartz, 1981).

Crisp (1981) and Fries (1974) are two prominent researchers who argued that the onset of menstruation may be related to feelings of being fat and consequent eating disorders. In a study of 13- 15 year olds, concern about fat and diet was found to be directly related to whether or not the girls were postmenarchal (Crisp, 1981). The argument is that as girls reach puberty and begin to put on the approximately 25% of body weight in fat needed for reproductive function, they may see themselves as divergent from the idealized societal norm and begin dieting. It was therefore predicted that girls who menstruated at a young age would be likely to have higher EDI scores because they may have been "feeling fat" and begun a diet. A significant negative correlation between age of first menses and scores on the EDI was found in this study.

A relationship between age of first diet and eating disorders was predicted and a significant negative correlation was found for these two. Several researchers, most dramatically Garner et al. (1980), in their study of centerfolds, Miss America Pageant winners, and diet articles, have documented the cultural pressures for women to be thin. Coupled with this pressure to be thin is the finding of Boskind-Lodahl and Sirlin (1977) that all of the subjects in their bulimia sample (N = 100) reported experiencing their first binge after a reduced calorie diet. Hawkins and Clement (1980) in their study of binge eating tendencies found "more severe binge eating problems coincident with

more stringent attempts at restraining eating behaviors" (p. 225). Wooley and Wooley (1980) also suggested that chronic dieting is often found in women who strive to maintain their weight at a socio-cultural artificial ideal which may be quite different from a biologically determined weight. Crisp (1980) also noted that as adolescents grow, their appetites increase which some adolescent girls may experience as out of control eating and they may compensate by dieting at precisely the time when the biological drive is to gain weight. For this study, it was predicted and found that the younger a girl dieted the more likely the EDI scores would be in the pathological direction.

To further examine the notion that girls who menstruate at a young age and engage in diets at a young age would be more likely to have an eating disorder these two variables were correlated with EDI scores. A significant negative multiple correlation was found which is in keeping with previous research. This finding presents additional evidence that girls who react by dieting to the weight gain of puberty necessary for reproductive function, may be at greatest risk for an eating disorder at a later time.

The most psychopathological end of the spectrum of weight and diet concerns among adolescents, although evident, is not very large. Bulimia was indicated among 1.8% of the girls and 0.9% of the boys and anorexia was indicated for only one boy whose score is suspect. The bulimia figures are smaller than those found by Halmi et al. (1981) but this might be expected because Halmi et al.'s population was considerably older (\bar{x} 25.6 \pm 10.7). Pyle et al. (1983) also reported a higher incidence of bulimia among college freshmen than was found in

this study of adolescents grades 6-12. The proportions of students in this study who reported using vomiting to control weight were 6.9% for girls and 5.4% for boys and the proportions who reported ever vomiting were 15.4% for girls and 7.9% for boys. Again, Halmi et al. (1981) reported higher incidences, 22.1% of women and 13.6% of men had ever vomited and 11.9% of women and 6.1% of men used vomiting as a weight control method.

In an attempt to further document that socio-cultural influences are critical determinants of anorexia and bulimia, it was predicted that scores on the more behavioral scales of the Eating Disorder Inventory: Drive for Thinness, Bulimia and Body Dissatisfaction, would increase by age groups but that the scores for the more psychological traits of Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness and Maturity Fears would not increase with age groups. Scores increased significantly for Drive for Thinness, Body Dissatisfaction and Bulimia and also for lack of Interoceptive Awareness and Perfectionism as grade level increased. The correlation Coefficients for Interoceptive Awareness and Perfectionism are both $+0.08$ which, while statistically significant at the $p .05$ level, may represent a Type I error due to the large sample size which could contribute to the correlation being statistically significant but not practically different. The correlations for Drive for Thinness, Body Dissatisfaction and Bulimia were $+0.12$, $+0.13$ and $+0.31$ respectively and probably do represent an increase with age which is practically as well as statistically significant. Another concern raised by these particular hypotheses and the statistical procedures used to test them

is that the data have been treated as though they were longitudinal, i.e., individual scores for each scale of sixth graders compared to individual scores of each increasing grade cannot really demonstrate that twelfth grade scores have increased for the particular subjects in that grade but only that current twelfth grade scores are higher than current sixth grade scores for a particular scale such as Bulimia (.31).

Discussion

While it appears that eating disorders as defined by Feighner et al. (1972), or the DSM III are not found in great numbers in the sample studied, it is clear that a large number of female adolescents are very concerned about weight and diet and this concern is very different both qualitatively and quantitatively from that of adolescent boys.

The finding of this study that is particularly important is the significant correlation of age of first menses, age of first diet and increased EDI scores. This suggests that the messages of this culture are so strong that young girls diet in order to deny their roundness brought on by reproductive function. This study provides strong evidence regarding the clear relationship between dieting and eating disorders and this is an important albeit frightening finding. At a very basic level young girls are being told that what is real and natural in a biological sense is wrong in a socio-cultural sense. It appears that adolescent girls, like women, are so afraid of fat that no price is too high for thinness, including health.

While boys and girls begin puberty with similar eating attitudes and behaviors, these attitudes and behaviors are quite different by twelfth grade and it might be anticipated that if the trend for females continued with increasing age, clinically defined eating disorders might become more apparent. It can be inferred that girls and boys are affected differentially by attitudes in this society regarding weight, diet and appearance.

Attitude toward weight seems to be different for boys and girls in that it seems to mean fat for girls, and strength for boys. When this is viewed in the context of how obese people are regarded as helpless, lazy and other largely pejorative terms it seems likely that girls would diet much more often than boys and that the dieting behavior would increase with age. These attitudes are often underscored by the advertising media in which diet drinks are advertised by young, very thin women wearing bathing suits and by muscular young men playing sports. Messages of this type from the media suggest little tolerance for any deviation for either men or women but men are at least engaged in an activity, not merely being seen or viewed. A powerful message is thus sent to adolescent girls: what they look like is all important!

Another consideration about the vast numbers of adolescent girls that are perpetually dieting is the waste of resources. When young girls see themselves as always dieting, always worrying about how they look and worrying about whether or what to eat, it seems reasonable to speculate about how much more they might accomplish if this energy were invested instead in solving personal and social issues.

The findings of this study seem particularly useful as they might

be applied to preventative education. As indicated by Wooley et al. (1980) very young children develop negative thoughts and feelings about obesity. At a very early age respect for and tolerance of differences could be taught. As students approach puberty, biological differences and what they might expect to happen to their bodies in terms of development could be explored and again respect for and tolerance of differences could be reinforced and differences could be appreciated rather than abhorred. As teens grow toward taking a more active role in society they could be taught to question the messages of society and that these messages are so different for men and women. Perhaps weight could come to be viewed in terms of health rather than in terms of an artificially imposed norm controlled by society's current whim.

Timely intervention could be enhanced through the use of the results of this study. Parents and others involved with young people as they approach puberty could be alert to and discourage dieting for cosmetic reasons. Girls, particularly, could be assured that their roundness is okay and is, in fact, necessary to their healthy growth.

Recommendations For Further Research

This study clearly indicates that dieting and menstruation at a young age are correlated with changes in eating attitudes and behaviors in the pathological direction with age. What appears needed at this point to further refine this finding is a longitudinal study. Rather than comparing age groups which implies change for individuals within a group, a longitudinal study could track girls who both diet and

menstruate at a young age to determine whether they do develop eating disorders with age.

Investigation is needed into eating attitudes and behaviors where questionnaires would be followed up by clinical interviews. Garner et al. (1984) cautions against using the EDI alone for diagnosing eating disorders but stated that it is very useful in conjunction with clinical interviews which they saw as critical. As a follow up to this study, interviews would have afforded more complete and perhaps accurate data particularly regarding incidences of eating disorders. Since the EDI is a self-report instrument it is vulnerable to distortion and some students may invalidate the self-report data. A study which would incorporate the careful use of clinical judgment in a clinical interview could confirm or deny the findings of an instrument.

Summary and Conclusions

Eating attitudes and behaviors of 951 adolescents in a non-clinical population were studied. A spectrum of attitudes and behaviors regarding weight and diet was established for adolescent girls. This spectrum ranges from endemic concerns about weight and diet to the psychopathological eating disorders. This study further established a relationship between age of first menstruation, age of first diet and a change in eating attitudes and behaviors in the pathological direction. As suggested by previous studies, this study confirmed and illuminated the differences between adolescent boys and girls in their eating attitudes and behaviors.

APPENDIX A

INSTRUMENTATION

Eating Disorder Instrument

Eating Behavior Questionnaire

EDI*

Instructions: This is a scale which measures a variety of attitudes, feelings and behaviours. Some of the items relate to food and eating. Others ask you about your feelings about yourself. THERE ARE NO RIGHT OR WRONG ANSWERS SO TRY VERY HARD TO BE COMPLETELY HONEST IN YOUR ANSWERS. RESULTS ARE COMPLETELY CONFIDENTIAL. Read each question and fill in the circle number on the answer sheet which corresponds to your answer. Please answer each question very carefully. Thank you.

1 = Always 3 = Often 5 = Rarely
2 = Usually 4 = Sometimes 6 = Never

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

*EDI - D.M. Garner M.P. Olmsted and J. Polivy. (1963) Toronto General Hospital, Toronto, Canada.

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

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

Eating Behavior Questionnaire*

This is a scale which tells about you and some of your attitudes and behaviors. Question 1-9 fill in the blank.

1. Present Grade _____.
2. Sex _____ Female _____ Male.
3. Birth: Month _____ Day _____ Year _____.
4. Your present height _____ ft. _____ in.
5. Your current weight _____ lbs.
6. The MOST you have weighed since sixth grade _____ lbs.
7. How tall were you at your highest weight? _____ ft. _____ in.
8. The LEAST you have weighed since sixth grade _____ lbs.
9. How tall were you at your lowest weight? _____ ft. _____ in.

Questions 10-41. Read each question and mark the circled number which corresponds to the letter of your answer.

10. My parents are:
 - A. Married
 - B. Separated
 - C. Divorced
 - D. Single living parent
11. I live with:
 - A. Both parents
 - B. Mother
 - C. Father
 - D. Other
12. My father works:
 - A. Full-time
 - B. Part-time
 - C. Doesn't work outside the home
13. My mother works:
 - A. Full-time
 - B. Part-time
 - C. Doesn't work outside the home

*Adapted from Binge-Eating Questionnaire (Halmi et al., 1980)

14. Number of sisters & brothers:
- | | |
|------|----------------|
| A. 0 | D. 3 |
| B. 1 | E. 4 |
| C. 2 | F. More than 4 |

15. My father's education was:
- A. Went beyond college
 - B. Graduated college
 - C. Had Some college
 - D. Graduated high school
 - E. Other

16. My mother's education was:
- A. Went beyond college
 - B. Graduate college
 - C. Had some college
 - D. Graduated high school
 - E. Other

17. My religious upbringing was:
A. Catholic
B. Jewish
C. Protestant
D. Other

18. My race/ethnic background is:
- A. American Indian
 - B. Asian/Oriental
 - C. Black
 - D. Hispanic
 - E. White
 - F. Other

(Choose one answer for each question 19-21)

- Answers
19. In my opinion, I am now: A. Very underweight
B. Underweight
20. In the opinion of my friends, I am: C. Average (about right)
D. Overweight
21. In the opinion of my family, I am: E. Very overweight
22. Are you on a diet now: By diet, we mean actually
changing your eating behavior for the purpose of
losing weight.
A. Yes
B. No

23. How old were you when you first went on a diet?
- | | |
|----------------|----------|
| A. 10 or under | F. 15 |
| B. 11 | G. 16 |
| C. 12 | H. 17 |
| D. 13 | I. 18 |
| E. 14 | J. Never |
24. Has your family ever encouraged you to diet?
- A. Yes
B. No
25. Do your friends encourage or support your dieting?
- A. Yes
B. No
26. How often have you gone on a diet during the last year?
- A. Never
B. 1-5 times
C. 5-10 times
D. More than 10 times
E. Am always dieting
27. How much time in a day do you spend exercising? (Not including gym class).
- A. Less than 1 hour
B. 1-2 hours
C. 2-3 hours
D. More than 3 hours
28. Girls only:
How old were you when you had your first menstrual period?
- | | |
|----------------|-------|
| A. Not yet | F. 14 |
| B. 10 or under | G. 15 |
| C. 11 | H. 16 |
| D. 12 | I. 17 |
| E. 13 | J. 18 |
29. Girls only
Are you currently having regular menstrual periods?
- A. Yes, regularly
B. Yes, but not regularly
C. No, not for the past 3 months or more
30. Do you get uncontrollable urges to eat and eat until you feel physically ill?
- A. Yes
B. No

31. Are there times when you are afraid that you cannot voluntarily stop eating?
A. Yes
B. No
32. Have you ever had an episode of eating an enormous amount of food in a short space of time (an eating binge)?
A. Yes
B. No
33. Do you feel miserable and annoyed with yourself after an eating binge?
A. Yes
B. No
C. Do not binge eat
34. Do you consider yourself a binge eater?
A. Yes
B. No
35. Have you ever made yourself vomit after eating too much?
A. Yes
B. No
36. How old were you when you first went on an eating binge?
A. 10 or under
B. 11
C. 12
D. 13
E. 14
F. 15
G. 16
H. 17
I. 18
J. Never

(Choose one answer for each question 37-41)

Answers

- A. More than once a day
B. Once a day
C. Several times a week
D. Once a week
E. Several times a month
F. Once a month or less
G. Rarely/never
37. How often do you have episodes of binge eating?
38. How often do you use diet pills?
39. How often do you use laxatives?
40. How often do you use diuretics or water pills?
41. How often do you use vomiting to control your weight?

APPENDIX B

COMMUNICATIONS

School District Letter

Instructions to Students

January 19, 1984

Ms. Linda Kron Brundage
1931 Pinecrest
East Lansing, Michigan 48823

Dear Ms. Brundage:

After carefully reviewing your survey material, I feel it is realistic and timely, in terms of the need for more information on dietary habits of school age youth. The content poses no risk to our students or to the school district.

We will continue to honor the rights of the parents and students in the distribution and administration of the survey. Anyone who chooses not to participate in any survey or questionnaire will be excused and in no way be discriminated against.

It is agreed that you will meet with our staff on January 31, 1984 to explain the survey procedures. This will also allow teacher input, as well as answer any questions that might develop.

We thank you for your time and consideration in this matter.

Sincerely,

Instructions to Students to be Read by
Teachers Prior to Administration of Surveys

Your cooperation in a project designed to study eating attitudes and behaviors of adolescents will be greatly appreciated. You may choose not to participate. Your responses, however, will be confidential and will contribute to a needed body of knowledge.

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