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AN EXAMINATION OF MALE AND FEMALE  
DEVELOPMENT OF TRAITS THAT PLACE  
INDIVIDUALS AT RISK FOR ANOREXIA  
NERVOSA.

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An Examination of Male and Female Development of  
Traits that Place Individuals at Risk for Anorexia Nervosa

by

Richard A. Shore

M.Sc. North Dakota State University, 1983

A Thesis

Submitted to the Faculty of Graduate Studies  
through the Department of Psychology  
in Partial Fulfillment of the  
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### Abstract

Anorexia nervosa has been considered to be largely a postpubescent female phenomenon. Accordingly, research in this area has focused almost exclusively on this group of females. Two overlapping perspectives have been provided as possible explanations for the prevalence of anorexia nervosa in this age group of females. These are the pubertal viewpoint (advanced by Crisp) and the sociocultural viewpoint (advanced by Garner). It was hypothesized that the effects of puberty and sociocultural propaganda would not differentiate prepubescent males or females, but that with the onset of puberty females would score higher than males on a measure of body dissatisfaction and drive for thinness.

It was also predicted that with puberty well underway, even greater differences would become evident between females and males. In order to assess this hypothesis, a nonclinical sample of six hundred and thirty two prepubescent, pubescent and postpubescent elementary and high school students (two hundred and six male and four hundred and twenty four female) aged 11 to 20 years old, from schools in southwestern Ontario were given Garner and Olmsted's (1984) Eating Disorder Inventory (EDI).

An analysis of EDI subscale reliability (internal consistency) was performed and supported Garner's contention that the scale is appropriate for administration for children as young as 11 years of age. Results indicated that females scored higher than males at all age groups on Drive for Thinness and Body Dissatisfaction. It is concluded that even as young as 11 and 12 years of age, females are experiencing dissatisfaction with body shape and are driven toward thinness to a greater extent than are males. As was predicted, as females get older, they increased in dissatisfaction with their bodily shape, however, contrary to predictions, they did not increase in their drive for thinness as they got older. Consistent with predictions, males did not increase on Drive for Thinness with age. Prepubertal males however were more dissatisfied with their body shape than were older males. These findings are consistent with the pubertal and sociocultural positions with the qualification that the sociocultural propaganda thought to play a role in the development of anorexia nervosa begins at a younger age than was commonly thought.

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## CHAPTER I

### INTRODUCTION

In considering some of the more perplexing psychopathological disorders of adolescence and early adulthood, one must certainly consider anorexia nervosa. The death of singer Karen Carpenter a few years ago brought to light the unfortunate and extreme fate which can befall those suffering from this disorder. Although North America is truly a land of plenty, there exists an ever increasing number of young people (mostly young women) who undergo a voluntary, severe limitation of their nutritional intake. This distortion of normal food intake is so severe and deliberate that it often results in death by malnutrition (Bruch 1972; Frankenburg, Garfinkel & Garner, 1982; Silverman, 1983).

The young people who undergo this "self-imposed" starvation diet are not lacking access to nutrients, nor are they below average in intellectual ability. In fact, typical anorexics demonstrate a level of intelligence that is at least in the normal range (Sterling & Segal, 1985; Strober, 1980) and come from the middle and upper socioeconomic classes in which there is an abundance of most resources (Dally & Gomez, 1980; Frankenburg, Garfinkel & Garner, 1982; Garfinkel & Garner, 1982; Garner, Garfinkel & Olmsted, 1983; Kalucy, Crisp & Harding, 1977; McSherry, 1984a, 1984b). Instead, the anorexic is driven to keep her weight down as a solution to her problems. She does this out of fear of becoming fat and the anticipation of feeling

happy when she is thin (Bemis, 1983).

Contrary to popular belief, those suffering from anorexia nervosa are not motivated solely by an aversion to food or a lack of appetite as the term "anorexia" implies. Anorexics maintain an intense desire or "relentless pursuit of thinness" (Bruch, 1971; Garfinkel & Garner, 1982; Garner, Olmsted, & Polivy, 1983b; Garner, Olmsted, Polivy & Garfinkel, 1984). This "drive for thinness" becomes an endless pursuit for the anorexic, to the point of appearing equivalent to a weight phobia (Crisp, 1970; Harding, 1985), an obsession, or overvalued idea (Bemis, 1983, 1985; Bruch, 1972; Katz, 1985; Leichner, 1985; Solyom, Thomas, Freeman & Miles, 1983). In fact, some anorexics will admit that they would rather die than face the possibility of gaining weight (Neuman & Halvorson, 1983).

A review of the literature reveals that there is a great deal more to anorexia nervosa than difficulties with eating behaviour. Garfinkel and Garner (1982) point out that construing anorexia nervosa solely as a disorder of eating is erroneous:

It is a disorder in which the drive for a thinner shape is secondary to concerns about control and/or fears about consequences of achieving a mature shape. The pursuit of thinness becomes necessary for the individual to feel a sense of mastery or control over her body, (Garfinkel & Garner, 1982, p.1).

As the anorexic's life increasingly revolves around this all encompassing drive for a thinner shape, she makes drastic changes to her lifestyle. She begins avoiding certain social situations such as mealtimes and weddings, and eventually will avoid her friends and family. Through this

3

avoidance, the anorexic progressively becomes more and more socially isolated (Boskind-Lodahl & White, 1983; Sterling & Segal, 1985). As the disorder proceeds, several symptoms become manifest such as: 1) a growing insecurity about her own accomplishments and attributes (Strober, 1980), perfectionism in all areas of functioning (especially where performance is rated such as school and sports), (Garfinkel & Garner, 1982; Halmi, Goldberg, Eckert, Casper & Davis, 1977; Landau, 1983; Leichner, 1985; Neuman & Halvorson, 1983), 2) ritualistic behaviour such as hoarding food and cutting food up into a precise number of pieces before eating (Boskind-Lodahl & White, 1983; Frankenburg et al. 1982; Garfinkel & Garner, 1982) and 3) feelings of depression and ineffectiveness (Altshler & Weiner, 1985; Bruch, 1982; Crisp, 1981; Halmi, 1985; Garfinkel & Garner, 1982; Neuman & Halvorson, 1983; Wold, 1983).

There is now a fairly extensive body of literature describing a wide variety of other psychological and behavioural traits common among anorexics. These will be discussed in some detail after a brief overview of the historical development of our understanding of the syndrome.

### Early History

Modern day anorexia nervosa has developed in a culture so narcissistic that it has come to accept, largely without question, artificially induced low weight norms (Andersen, 1985). Although it is generally accepted that anorexia nervosa currently affects a greater number of people than at any other time, it is not solely a "20th century phenomenon" as is commonly believed. There are accounts as far back as 1689 of women with "nervous consumption" (Bell, 1985; Lucas, 1981). The syndrome was described as

"deliberate self-starvation due to an ill and morbid state of the spirits", suggesting that as far back as the 1600's it was acknowledged that anorexia nervosa had a large psychological as well as medical component (Neuman & Halvorson, 1983). It is interesting that this instance of anorexia nervosa occurred at a time when it was more fashionable for young women to have a more rounded profile than is the fashion today. This is significant since it illustrates that our culture, with its obsession with women's thinness, while largely to blame for the increasing prevalence of the disorder, is not a sufficient explanation as to the disorder's etiology (Garfinkel & Garner, 1982; Garner, Garfinkel & Olmsted, 1983).

The early saliency granted to the psychological contribution in anorexia nervosa was virtually negated in what has been referred to as the "Pituitary Era" (Lucas, 1981; Neuman & Halvorson, 1983). During this period (circa 1914), anorexia nervosa was viewed primarily as a pathological condition of the "organs and cells" and was henceforth referred to as Simmonds' disease. This "new" orientation came about after an autopsy by Simmonds on a severely emaciated woman revealed pituitary gland lesions. At this point, "the whole approach (to anorexia nervosa) changed" (Bruch 1976, p. 788). It was assumed from that point until the 1930's that anorexia nervosa was caused by a lack of pituitary enzymes. Bruch (1982) describes how the pituitary glands from animals were indiscriminately implanted as a treatment for young women who demonstrated anorexic symptoms. Anorexics who were unfortunate enough to live at this time were routinely treated with pituitary gland extracts even if they had no demonstrated endocrine failure or deficiency.

The 1930's initiated an era of rediscovery for anorexia nervosa (Lucas,

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1981; Neuman and Halvorson, 1982). During this time, there was much debate on whether Simmonds' disease was a separate clinical entity from a largely psychologically based anorexia nervosa syndrome. The psychological relevance of anorexia nervosa was finally confirmed after several large scale reports were published.

### Modern Era

According to many authors, it was the work of Hilde Bruch that brought the understanding of anorexia nervosa into what Neuman and Halvorson term the "Modern Era" (Garfinkel & Garner, 1982; Lucas, 1981; Neuman & Halvorson, 1983). One of Bruch's many major contributions to the area was her distinction between different forms of anorexia nervosa. Bruch's (1971; 1978) suggestion that anorexia nervosa consists of both a primary and a secondary form has received a great deal of support in the literature (Garfinkel & Garner, 1982; Gross, 1982).

In both classifications of anorexia nervosa a severe weight loss occurs. However, as Bruch and later Garfinkel and Garner (1982) point out, focusing on weight loss and absence of appetite alone may lead to an inappropriate diagnosis of anorexia nervosa. It is possible that such symptoms reflect the manifestation of some other medical or psychiatric disorder. In the secondary form of anorexia nervosa, an individual may have a severe weight loss and/or loss of appetite because of depression, paranoid schizophrenia (wherein the individual has delusions that his food is poisoned) or some physiological abnormality that would account for a disinterest in food such as a tumor in the hypothalamus (Bruch 1971; Garfinkel & Garner, 1982; Gross, 1982).

In contrast, primary anorexia nervosa is a clearly defined syndrome that makes it readily distinguishable from "simple" weight loss or weight loss for other reasons. In primary (or "genuine anorexia nervosa" as Bruch (1971) has called it), weight loss is evident but a loss of appetite may not occur. Although the term "anorexia nervosa" refers to a loss of appetite from a psychological cause, the term is actually a misnomer. There may be no real loss of appetite until the latter stages of the illness (Bruch, 1971, 1982; Garfinkel & Garner, 1982; Gross, 1982; Harding, 1985). Most anorexics are not only aware of their hunger and the presence of food, but they also may have obsessional thoughts and ritualistic/compulsive behaviour towards food (Bemis, 1983; Beumont, George & Smart, 1976; Crisp, 1983; Garner, Garfinkel & Moldofsky, 1978; Halmi, 1974; Solyom, Thomas, Freeman, & Miles, 1983; Sours, 1980; Strober, 1980). In addition, the anorexic may use (and perhaps abuse) appetite suppressants in order to avoid or deny these feelings of hunger (Leichner, 1985). Anorexics have been known to hoard or steal food; to eat only if alone, in the dark or standing; to not allow their food to touch their lips when placing it in their mouth; to cut up food into a predetermined number of pieces (even if the food is not normally cut, such as toast) and to eat only certain types of food, usually those presumed to be low in calories and low in carbohydrates (Garfinkel & Garner, 1982).

The anorexics' preoccupation with food may lead them to become "food experts". They may take great pains in preparing meals for the whole family, ensuring that each member (except themselves) receives all the recommended nutritional requirements. They may have an extensive knowledge of the vitamin and mineral content of various foods, as well as what the daily minimum requirements are for each, but yet are almost

totally naive as to the operation of their own bodies. For example, an anorexic may know the precise number of nutrients required for a human body to function properly, but will still fear that if she eats even a modicum of food (necessary to get these nutrients) she will lose control over her weight and become obese (Neuman & Halvorson, 1983). Thus even with this extensive knowledge of nutrition, an anorexic will typically limit her food intake to only 600-800 calories per day (Garfinkel & Garner, 1982; Neuman & Halvorson, 1983). Finally, anorexics will constantly discuss food with friends, demonstrate great interest in collecting recipes, and will even have food related dreams (Neuman & Halvorson, 1983). It is apparent that anorexics do not lack an appetite or interest in food, but rather are denying the existence and/or meaning of their hunger sensations.

Of greater significance in the differentiation between the two forms, primary anorexia nervosa can be distinguished from secondary anorexia nervosa by the former's "relentless pursuit of thinness". In primary anorexia nervosa, the anorexic is driven toward an ever evasive thinner shape (Bruch, 1971; Garfinkel & Garner, 1982; Leichner, 1985; Schwartz, Thompson & Johnson, 1983; Sterling & Segal, 1985). Garner and Olmsted, (1984) consider this intense and ever increasing desire for a thinner shape to be the "cardinal" feature of primary anorexia nervosa.

Gross (1982) speculates that as many as 90% of all cases of primary anorexia nervosa began innocently as a "simple" diet or as a desire to support a friend who (for whatever reason) must diet. This notion that anorexia nervosa starts out as a diet "gone wild" has received some support (Crisp, Hsu & Harding, 1980; Garfinkel & Garner, 1982; Neuman & Halvorson, 1983). As the potential anorexic starts to lose weight she may receive some



social reinforcement in the way of compliments and increased attention from peers. In addition, a diet's objective success (lower numbers on the bathroom scale, looser fitting clothes, etc.) may become a source of pride and accomplishment for the anorexic and as well may provide her with an important sense of self-control. In considering the saliency of normal dieting to the onset of anorexia nervosa, Crisp et al. (1980) note that since dieting is so common in girls, it is difficult to determine how relevant dieting is in the development of anorexia nervosa.

The anorexic comes to believe that there exists a negative correlation between the numbers on her scale and her feelings of self worth (i.e. as the numbers go down, she will start to feel better about herself and her world) (Altshler & Weiner, 1985). However, unlike nonanorexics with a desire to diet, the anorexic does not feel better about herself as her weight decreases. It is more likely that dieting and fear of obesity will not decrease as weight goes down (Frankenburg et al., 1982). In fact for many anorexics the thinner they get, the fatter they feel (Neuman & Halvorson, 1983). Frightened by the possibility of gaining weight, the anorexic will often feel compelled to maintain and control this lower weight. This in turn leads to more dieting and attempts at control.

It is readily apparent that any definition of anorexia nervosa that describes the syndrome solely in terms of a drastic reduction of nutrient intake or a certain percentage below a medically recommended weight for a person's height and age is misleading (Garfinkel & Garner, 1982; Walen, Hauserman & Lavin, 1977). An accurate description of anorexia nervosa requires much more than a numerical account of weight loss. It is a phenomenon wherein an anorexic is less concerned with medical assurances

about her weight than with how she perceives herself (which is always too fat) and how much control she has (which is very little) (Boskind-Lodahl & White, 1983; Bruch, 1978; Ciseaux 1980; Garner, Garfinkel & Moldofsky, 1978).

The primary anorexic exhibits an at times delusional disturbance of body image in which she perceives herself to be fat, even in the presence of objective information to the contrary. In other cases, the anorexic may see herself as "just right" even though she is emaciated (Boskind-Lodahl & White, 1983; Bruch, 1978, 1982; Ciseaux, 1980; Campbell, Porter & Moriarty, 1986; Crisp 1980; Freeman, Thomas, Solyom & Miles, 1983; Garner & Garfinkel 1982, 1983; Garner, Garfinkel & Moldofsky, 1978; Garner, Olmsted & Polivy, 1983b; Neuman & Halvorson, 1983; Leichner, 1985; Wilson, 1982). The anorexic will either defend this distorted body image with great tenacity or will display a complete lack of concern if she does realize that she is emaciated (Garfinkel & Garner, 1982). Garner and Garfinkel (1981) cite an example from Bruch wherein a young woman, who at the time weighed 33 kgs. (72.6 lbs.) and was 168 cm (5.5 feet) tall, displayed typical distorted body perceptions:

I look in a full mirror at least four or five times daily and I really cannot see myself as too thin. Sometimes after several days of strict dieting; I feel that my shape is tolerable, but most of the time, odd as it may seem, I look in the mirror and believe I am too fat, (p. 265).

In a second type of perceptual distortion, the primary anorexic will either tend to misinterpret, or have difficulty in accurate identification or acceptance of, interoceptive stimuli such as hunger. The difficulty a primary

anorexic has in properly labeling internal "messages" indicates an inability to properly monitor her interoceptive functions (Bruch, 1982; Garfinkel & Garner, 1982). This lack of accurate visceral monitoring suggests the mechanism by which anorexics can maintain the strenuous exercise regimen that many undertake. Whereas the average person would feel great fatigue under such conditions as extreme exercise on a body virtually depleted of all caloric intake, the anorexic is driven to exercise by the reinforcement of possible weight loss and the experience of euphoria as endogenous opiates are released in the brain (Katz, 1985; Marrazzi & Luby, 1986).

In addition to misinterpreting or perhaps denying her feelings of hunger, the primary anorexic will also display a lack of responsiveness to cold, fatigue, sexual impulses and other affective states (Boskind-Lodahl & White, 1983; Bruch, 1977; Garfinkel & Garner, 1982; Garner et al., 1983a, 1983b). This inability to identify and/or accept feelings of hunger has been considered a perceptual distortion similar to the distortion of body image (Garfinkel & Garner, 1982):

Anorexics have remarkable difficulty in focusing on, and accurately reporting, their emotional and physical states. When asked to describe their sensations of satiety, they often respond with such incongruities as: 'I feel like I have eaten'; 'I don't like it'; 'I feel guilty'; or they may describe bloating, discomfort, pain, or distension. Inquiries about their emotions may result in defensive or hostile responses to what is viewed as an intrusion into an area that they do not understand...This interoceptive confusion is most evident in relation to specific aspects of visceral functioning. It is expressed as a gross mistrust of the

body to carry out automatic regulatory processes without conscious control. Some even consider their bodies to be like a foreign and defiant object which must be subdued. This control and hypervigilance are most obvious with food (Garfinkel & Garner, 1982, pp. 148-149).

The final aspect of primary anorexia nervosa that Bruch has elucidated concerns the "paralyzing sense of ineffectiveness which pervades all thinking and activity of anorexic patients" (Bruch 1978, p. 794). The development of feelings of ineffectiveness may be a major predisposing factor to anorexia nervosa (Garfinkel & Garner, 1983). When a child grows up in an environment which provides little opportunity for feelings of self-efficacy, she may become overly dependent on other family members. This in turn may lead to difficulty later in psychological separation from the family. The potential anorexic matures without a sense of autonomy and/or personal identity (Bruch, 1977, 1982; Crisp, 1970; Frankenburg et al. 1982; Garfinkel & Garner, 1982, 1983; Strober, 1980) and may come to believe that others have greater importance than they do, thereby becoming "people pleasers" (Bell, 1985; McSherry, 1984b; Neuman & Halvorson, 1983).

The sense of ineffectiveness predominant in primary anorexia nervosa involves feelings of worthlessness which eventually develop into a sense of helplessness about her world (Bruch, 1971, 1977, 1982; Garner, Olmsted & Polivy, 1983b; McLaughlin, Karp & Herzog, 1985; Selvini-Palazzoli, 1974; Sterling & Segal, 1985). The primary anorexic comes to believe that she has no control over her world to the point that she feels others are controlling her bodily movements and functions (Bruch 1982; McLaughlin, Karp & Herzog, 1985). In other words, she feels that she is at the mercy of her

environment.

These then are the cardinal attributes of primary anorexia nervosa: a relentless pursuit of thinness; a disturbance in body image; a lack of interoceptive awareness, and a pervasive sense of ineffectiveness. These attributes are manifested in a variety of psychological and behavioural patterns. These patterns include obsessional slowness in eating, obsessions with water, "exercise anorexia" or excessive exercising to keep weight down (Moriarty, 1987), lying about eating behaviour (Garner et al. 1978); excessive compliance and dependency as well as having a sense of self-worth which is greatly regulated by the opinions of others (Halmi et al. 1977; Weeda-Mannak, Drop, Smits, Strijbosch, & Bremer, 1983).

Young women who eventually become anorexic tend to exhibit feelings of inferiority about their intelligence, personality and appearance (Levenkron, 1982; Wilson, 1982) and have excessive concerns about fulfilling parental expectations, thereby becoming highly achievement oriented (Bell, 1985; Sterling & Segal, 1985). They will often display tendencies toward self-abasement, limited spontaneity and an inability to maintain self-directed autonomy (Strober, 1980). It has been a relatively consistent finding that anorexics score in the average to above average range in intelligence and do quite well in university although they will play down the significance of this (or any other) positive attribute (Neuman & Halvorson, 1983; Sterling & Segal, 1985; Strober, 1980). Andersen (1985) notes that these academic accomplishments are probably the result of the anorexic's obsession with details and tendency toward overachievement, facilitating the maintenance of high grades, rather than some inherent intellectual ability.

Accompanying the drastic weight loss of anorexia nervosa, several other significant physiological manifestations can be noted. There is a significant interruption of normal reproductive hormonal functioning, resulting in amenorrhea in females and decreased sex drive in male anorexics (Abraham & Beumont, 1982; Andersen, 1985; Crisp, 1983; Fairburn & Cooper, 1982; Frankenburg, et al., 1982; Neuman & Halvorson, 1983; Sperling, 1978; Sterling & Segal, 1985; Weeda-Mannak, et al., 1983). These physiological manifestations greatly resemble the starvation effects demonstrated by nonanorexics undergoing starvation for other reasons, such as concentration camp prisoners, hostages or volunteers in scientific experiments (Garfinkel & Garner, 1982).

The effects of starvation may also be the source of many of the psychological traits found in anorexia nervosa and therefore may be a major factor in the maintenance of the illness (Andersen, 1985; Garfinkel & Garner, 1982). After a certain amount of body weight is lost, any individual, either anorexic or nonanorexic, will become preoccupied with food. Interest in food becomes a major theme in their lives to the virtual exclusion of social activities and personal grooming. This lack of social contact contributes to feelings of depression and ineffectiveness, which in turn leads to greater preoccupation with food and dissatisfaction with their bodies. In addition Katz (1985) notes that one of the sustaining aspects of anorexia nervosa is the euphoric feeling the anorexic receives at the earlier stages of the illness. This is caused by an increase in the brain opioid endorphin which had been significantly decreased by starvation and subsequently increased by the strenuous physical activity that most anorexics undertake to lose weight.

While there is a great deal of similarity between those subjected to the

effects of starvation and anorexia nervosa, the major difference is that for an anorexic there is a fear of fatness, distortion of body image and excessive energy, traits that are not found in the latter group. Once the "starvation syndrome" has set in, psychotherapy will be of little value for the anorexic (Neuman & Halvorson, 1983).

For the balance of this paper, the terms anorexia nervosa and anorexic will be used to refer to the primary form of the disorder.

### **Bulimia**

There has been some debate in the literature regarding the relationship between anorexia nervosa and bulimia (Casper, Eckert, Halmi, Goldberg & Davis, 1980; Garner, Garfinkel & O'Shaughnessy, 1985). Bulimia has been described as a subtype of anorexia nervosa, wherein the individual alternates between periods of not eating and consuming large quantities of food. Those with bulimic traits will usually overindulge in whatever food is available, (usually high carbohydrate foods) and then purge the food from their systems, either by vomiting or laxatives (Garfinkel & Garner, 1982). Guiora (1967) was the first to suggest that both anorexic and bulimic symptoms could exist in the same person as part of the same syndrome. Adopting a largely psychoanalytic approach, he coined the term "dysorexia" to describe a syndrome characterized by both anorexic and bulimic behaviour. To Guiora, anorexic and bulimic behaviour are polar opposites of the same disorder, with dysorexia "in the middle". Garfinkel et al. (1980) have similarly commented on bulimic behaviour as constituting a variant subclassification of anorexia nervosa. Loro (1982) differentiates between bingeing alone and bingeing accompanied with purging. The former is associated more with obesity while the latter is associated with normal

weight and anorexic behaviour. Crisp (1983) refers to a syndrome of "abnormal/normal weight control", while Russell (1979) coined the term "bulimia nervosa" to refer to a variant of anorexia nervosa that resembles the bulimic subtype referred to by Garner et al. (1980). Dally (1979) has described three categories of anorexia nervosa: obsessional, hysterical and a mixed group, while Boskind-Lodahl and White (1983) coined the term "bulimarexia" to encompass both anorexic and bulimic symptoms. Summarizing this labeling confusion, Vandereycken and Meermann (1984) comment:

Although there may be some disparity in the accentuation of some characteristic or another, the description of this "new" bulimia syndrome by various authors is strikingly similar despite the different labels which have been suggested: bulimia nervosa, bulimarexia, compulsive eating, dietary chaos syndrome, gorging-purging syndrome, hyperorexia nervosa, kibarashi-gui, stuffing syndrome and Tanthal-Polyphem syndrome, (page 2).

Although the terminology can be confusing at times, there is a great deal of support for the consideration of two subtypes of anorexia nervosa. The most heuristic terminology to date has been used by the Garner group: restricting and bulimic subtypes (Frankenburg et al. 1982; Garfinkel & Garner, 1982; Garfinkel, Moldofsky & Garner, 1980; Garner, Garfinkel & O'Shaughnessy, 1985; Garner, Olmsted & Garfinkel, 1983).

Various authors have commented on the personality differences that distinguish those anorexics with the restricting subtype of anorexia nervosa from those with the bulimic subtype. For example, bulimic anorexics are



more likely to have abused alcohol or street drugs, and to have had more suicidal ideation and made more suicide attempts than restricting anorexics (Crisp, 1983; Crisp, Hsu & Harding, 1980; Frankenburg et al. 1982; Garfinkel, Moldofsky & Garner, 1980; Leichner, 1985). In addition, bulimic anorexics have a more problematic sex life (Frankenburg et al. 1982; Garfinkel, Moldofsky & Garner, 1980; Russell, 1979), display more antisocial behaviour, especially stealing (Crisp, Hsu & Harding, 1980; Frankenburg et al. 1982), and experience greater anxiety (Crisp, Hsu & Harding, 1980) and impulsivity (Garner, Garfinkel & O'Shaughnessy, 1985) than restricters. Beumont et al. (1976) found that restricters were more withdrawn and introverted, but had a better prognosis for recovery than their bulimic counterparts.

Neuman and Halvorson (1983) note that the main differentiation between the two anorexic subtypes is the frequency and intensity with which they eat and the methods by which they pursue their drive for thinness. Table 1 provides a comprehensive comparison between the restricting ("non-bingers") and bulimic ("bingers") anorexics.

### **Epidemiology**

Until recently anorexia nervosa was considered to be quite rare (Cobb, 1943). While now known to be a relatively common phenomenon, the actual incidence of the disorder has been difficult to determine for several reasons. Due to a lack of standardization in the diagnostic criteria of anorexia nervosa, there exists an inability to provide an accurate diagnosis, thereby limiting the accuracy of any prevalence estimates. The anorexic is typically active in her attempts to avoid being diagnosed, since that would imply forced weight gain--to her literally a fate worse than death.

**Table 1. Comparison of Anorexic Bingers and Nonbingers**

<u>Nonbingers</u>	<u>Bingers</u>
1. Younger at age of onset	1. Older at age of onset
2. Fanatic self discipline	2. Less self-control and impulsivity <ul style="list-style-type: none"> <li>• More stealing</li> <li>• More alcohol and drug abuse</li> <li>• More suicide attempts and self-mutilation</li> <li>• More laxative abuse</li> <li>• Higher Pd scale on MMPI</li> <li>• Binge eating</li> <li>• More vomiting</li> </ul>
3. Depressed but little overt psychic distress	3. Greater psycho distress, guilt <ul style="list-style-type: none"> <li>• More depressed</li> </ul>
4. Withdrawn	4. More outgoing, anxious labile mood
5. Sexually naive	5. Often sexually active
6. Tirelessness (until illness is advanced)	6. May complain of fatigue
7. Feel cold; low blood pressure and slow pulse rate	7. May feel hot, sweaty after binge
8. Periods of deep sleep; dream sleep reduced	8. More sleep disturbance
9. Denial of hunger	9. Stronger appetite complaints (though not necessarily hunger per se)
10. Deliberate eating	10. Rapid eating
11. Less maternal obesity	11. More maternal obesity
12. Lower original normal body weight	12. Higher premorbid weight and more premorbid obesity
13. Denial of problematic eating	13. Awareness that eating is abnormal
14. Steady weight loss	14. Frequent weight fluctuations
15. Less concerns with sexual attractiveness	15. Great concern with appearance and sexual attractiveness
16. Course of the illness may be a single but lengthy, episode	16. Course of the illness is usually chronic and intermittent over a number of years
17. Fewer somatic complaints	17. More somatic complaints (headaches, stomach problems)
18. Better relationship with father	18. Poor relationship with father
19. Frequently oppose treatment	19. Favor treatment more often <ul style="list-style-type: none"> <li>• May be due to greater emotional strain and feeling out of control</li> </ul>
20. Eat low calorie, low fat foods only	20. Eat high calorie foods during binges

Taken from Neuman & Halvorson (1983, p. 18).

Anorexic patients will characteristically not admit the psychological aspects of their disorder. They also become quite adept at hiding their emaciation from the scrutiny of others during assessments by padding their clothes or wearing loose fitting clothes. It is apparent then that anorexics will not seek treatment on their own. If they do pursue treatment it would most likely be for some secondary characteristic of the disorder.

(Frankenburg et al. 1982; McSherry, 1984a). For example, an emaciated patient may present herself at a physician's office but will only ask the doctor for assistance in sleeping due to upcoming exams. Therefore it is possible for an individual to be in direct contact with a physical and/or mental health professional, exhibit all the physical symptoms of anorexia nervosa but yet not be so diagnosed.

It is widely agreed that the incidence of anorexia nervosa is increasing. The recent implementation of large scale epidemiological investigations (Crisp, Palmer, & Kalucy, 1976; Frankenburg et al., 1982; Jones, Fox, Babigan, & Hutton, 1980; Kendell, Hall, Hailey, & Babigan, 1973; Willi, 1983) and refinement of diagnostic criteria (Garfinkel & Garner, 1982), has supported this contention. This increase has been noted in females, but not in males with approximately 0.5% of adolescent girls afflicted (Garfinkel & Garner, 1982; Harding, 1985). Although it has been suggested that the increased incidence is merely the result of better record keeping and increased attention from the media, it has been argued convincingly that the dramatic increase noted in the literature is a bona fide one (Bruch, 1982; Crisp, 1980; Crisp Palmer & Kalucy, 1976; Fairburn & Cooper, 1982; Frankenburg et al. 1982; Garner, Garfinkel and Olmsted, 1983; Halmi, 1974; Jones, Fox, Babigan & Hutton, 1980; Schwartz, Thompson & Johnson, 1983; Willi, 1983).

There has always been a large representation of the upper classes in the anorexia nervosa literature (at least in recent history) (Andersen, 1985; Dally & Gomez, 1980; Frankenburg et al. 1982; Garner, Garfinkel & Olmsted, 1983; Heilbrun & Bloomfield, 1986; Herzog, 1982; Kendell, Hall, Hailey, & Babigan, 1973; McSherry, 1984a, 1984b; Selvini Palazzoli, 1974), while there is conflicting evidence concerning anorexia nervosa in the lower classes (Garfinkel & Garner, 1982; Kendell, Hall, Hailey & Babigan, 1973).

Anorexia nervosa is primarily a female phenomenon. It is generally agreed that anorexia nervosa exists in a 9 to 1 female to male ratio (Andersen, 1985; Gross, 1982; Harding, 1985; McSherry, 1984b). However, anorexia nervosa also affects males (Bruch, 1978; Crisp, & Burns, 1983; Garfinkel, & Garner, 1983; Sterling & Segal, 1985), and the literature reports females ranging from 7-59 years of age with anorexia nervosa (Andersen, 1985). There is however some debate as to the age of onset and prevalence of anorexia nervosa. Table 2 and Table 3 indicate recent reports as to the age of onset and the overall prevalence of anorexia nervosa in North America.

It is generally agreed however, that the onset of anorexia nervosa occurs between the ages of 12-18 in females (Askevold 1983; Brady & Reiger, 1972; DSM III) and is largely a phenomenon of "early to late adolescence". There are some data to indicate that anorexia nervosa may begin with the onset of puberty regardless of the age that this occurs (Crisp, 1970, 1983; Crisp et al., 1980; Garner, Garfinkel, & Olmsted, 1983; Neuman & Halvorson, 1983; Muuss, 1985; Selvini Palazzoli, 1974; Wilson, 1982).

Table 2. Age of Onset of Anorexia Nervosa

<u>Age of Onset of Anorexia Nervosa</u>			
<u>Source</u>	<u>Age of onset</u>	<u>Sex</u>	<u>Comments</u>
Askevold, 1983	13-20	Females	Majority of onset between these ages
Brady & Reiger, 1972	14-25	Females	
Campbell & Porter, 1986	14-18	Male and Female	
Casper et al. 1980	14 and 18	Male and Female	Bimodal risk at these ages
Crisp & Burns, 1983	17	Male and Female	
DSM III	12-18	Female	
Garner et al. 1983	14 and 18	Male and Female	
Gross, 1982	12-18	Female	
Leichner, 1985	12-20	Female and Male	22.3% females and 5.7% males these ages
Sterling & Segal, 1985	14	Male	60% of occurs prior to this age

Table 3. Reported Incidence of Anorexia Nervosa

<u>Reported Incidence of Anorexia Nervosa</u>		
<u>Source</u>	<u>Incidence</u>	<u>Sex</u>
Crisp, 1980	1 in 750	Female
Crisp et al., 1976	1 in 100	Female
DSM III	1 in 250	Female
Garfinkel & Garner, 1982	0.5% of population	Female
Gross, 1982	1 in 250	Female
Harding, 1985	0.5% of population	Female
Kendell et al. 1973	1.6/100,000	Female
Leichner, 1985	22.3%/5.7%	Female/Male

The lack of any standardized criteria in assessing anorexia nervosa, contributes to the variability of prevalence estimates listed in Table 3. The absence of such standardization prevents valid comparisons being made. For example one author reports that 1 in 100 cases will be anorexic, while another study may quote a ratio of 5 in 100. Since such ratings rarely provide the reader with the range of severity of symptoms, it is impossible to perform any comparisons. When the severity of symptoms is specified (e.g. Crisp et al, 1976), the criteria that were used to distinguish a severe case of anorexia nervosa from one that wasn't severe is not mentioned. The need for well researched, standardized operational definitions is evident such that these important comparisons between populations could be made.

### Diagnostic Criteria

Bruch's work was truly pioneering in its delineation of the existence of anorexia nervosa both as a secondary symptom in certain illnesses and as a syndrome unto itself. Askevold (1983) points out that, although Bruch proposed many essential concepts which furthered the understanding of anorexia nervosa (such as the relentless pursuit of thinness), these contributions are not very useful for the construction of reliable clinical diagnosis. It wasn't until the 1970's that there was anything resembling scientifically reliable diagnostic information for the assessment of anorexia nervosa:

Either there was an absence of clearly defined diagnostic indications in spite of some of the 'experts' having their own criteria, or there seemed to be a silent agreement in the literature as to what was meant by the term anorexia nervosa

without being explicit (Vandereycken & Meermann, 1984, page 5-6.)

Although Bruch (1972, 1977, 1978, 1982) and other earlier theorists such as Crisp (Crisp, 1970, 1980; Crisp et al. 1976) listed the various signs and symptoms of anorexia nervosa, there was little consensus as to the most salient characteristics of the disorder. This lack of consensus led to a great deal of confusion and misinformation about the nature of anorexia nervosa. For example, Vandereycken and Meermann, (1984) note that, as late as 1979, 40% of internists and 25% of psychiatrists did not think that anorexia nervosa could occur in males.

The first widely used scientifically based clinical diagnostic criteria, known as the "Feighner criteria," were published in 1972 by Feighner, Robins, Guze, Woodruff, Winokur & Munoz (see Table 4). These criteria were devised for use in clinical research. Although they received a lot of criticism, the Feighner criteria did start the trend toward a more comprehensive, clearly defined listing of the most salient clinical aspects of anorexia nervosa (Andersen, 1985).

One of the main advantages of the Feighner criteria is that they provided for the first time, specific numerical values for the determination of a diagnosis of anorexia nervosa. While this may be an integral aspect of performing accurate assessment, it unfortunately eliminated many anorexic individuals from diagnosis. For example while most anorexics are under 25 years of age as is required for diagnosis under the Feighner criteria, there are cases of anorexia nervosa in individuals over 30 years of age (Askevold 1983; Vandereycken & Meermann, 1984).

**Table 4. Feighner Criteria for Anorexia Nervosa**

- A. Age of onset prior to 25.
- B. Anorexia with accompanying weight loss of at least 25% of original body weight.
- C. A distorted, implacable attitude toward eating, food, or weight that overrides hunger, admonitions, reassurance, and threats:
  - 1) denial of illness with a failure to recognize nutritional needs;
  - 2) apparent enjoyment in losing weight with overt manifestation that food refusal is a pleasurable indulgence;
  - 3) a desired body image of extreme thinness with overt evidence that it is rewarding to the patient to achieve and maintain this state;
  - 4) unusual hoarding or handling of food;
- D. No known medical illness that could account for the anorexia and weight loss.
- E. No other known psychiatric disorder with particular reference to primary affective disorders, schizophrenia, obsessive-compulsive and phobic neurosis. (The assumption is made that even though it may appear phobic or obsessional, food refusal alone is not sufficient to qualify for obsessive-compulsive or phobic disease).
- F. At least two of the following manifestations:
  - 1) amenorrhea
  - 2) lanugo hair
  - 3) bradycardia (persistent resting pulse of 60 or less)
  - 4) episodes of bulimia
  - 6) vomiting (may be self-induced).

**For a diagnosis of anorexia, A through E are required (Feighner et al. 1972)**



Vandereycken and Meermann, (1984) have further criticized the Feighner criteria for their use of the term "anorexia" in the second criterion. As was earlier mentioned it is a misnomer to refer to the illness solely as "anorexia", since there is not true loss of appetite. Furthermore, setting the weight loss criterion as +25% is somewhat naive since it does not consider the individual's original weight. Neuman and Halvorson (1983) point out that for individuals who are obese, 25% may be too "lenient" in that such a weight loss would not be indicative of any imminent danger, and may even place them at their optimal weight. Conversely, 25% may be too stringent a criterion for anorexics who typically are not overweight at the onset of the disorder.

While the salience of the other criteria have been discussed previously, the final category of the Feighner criteria deserves elaboration due to its controversial nature. For example, lanugo (a growth of very fine hair) is included as a possible criterion. This symptom occurs in only a small number of patients and is therefore an unnecessary criterion (Askevold, 1983; Vandereycken and Meermann, 1984). On the other hand, amenorrhea, which is a loss or temporary cessation of menses, common in female athletes, is also found in anorexic women. According to Gross (1982), amenorrhea occurs when there is a loss of approximately 17% of total body weight from a normal weight for height, but in many cases may actually precede any noticeable weight loss (Neuman & Halvorson, 1983).

The symptom of amenorrhea is considered by some authors to be of primary importance for the diagnosis of anorexia nervosa (Abraham & Beumont, 1982; Crisp, 1980, 1981, 1983; Crisp & Burns, 1983; Fairburn & Cooper, 1982; Frankenburg, et al. 1982; Gross, 1982; Sperling, 1978; Sterling

& Segal, 1985; Weeda-Mannak, et al., 1983). The requirement of the presence of amenorrhea may exclude or at least confuse the diagnosis of: 1) males; 2) young patients that have not yet started menses; 3) pregnant women; 4) women taking contraceptives--taking the pill secretly and then claiming that anorexia nervosa is an impossibility since menstruation still occurred (Vandereycken & Meermann, 1984).

In addition to the difficulties of requiring a symptom such as amenorrhea in the diagnosis of anorexia nervosa, the inclusion of vomiting and bulimic episodes in the criteria presents a different type of problem. It raises the question of whether bulimia is a separate illness from anorexia nervosa. Although there is evidence to support the existence of restricting and bulimic subtypes of anorexia nervosa, the Feighner criteria did not include these as diagnostic classifications.

It was for these reasons that the Feighner criteria were slowly replaced by those of the Diagnostic and Statistical Manual of Mental Disorders (third edition) (DSM III) (APA, 1980) (see Table 5). While these newer criteria are not without their shortcomings, they are currently in vogue. DSM III has improved upon many of the shortcomings of the Feighner criteria. For example DSM III does not specify an age of onset nor does it require the absence of appetite--acknowledging the term "anorexia" to be a misnomer. Although the 25% weight loss requirement is still included, it is somewhat more flexible in the DSM III criteria as it allows for the individual differences of younger children.

**Table 5. DSM III Criteria for Anorexia Nervosa**

- A. Intense fear of becoming obese, which does not diminish as weight loss progresses.
- B. Disturbance of body image, e.g. claiming to "feel fat" even when emaciated.
- C. Weight loss of at least 25% of original body weight; or if under 18 years of age, weight loss from original body weight plus projected weight gain expected from growth charts may be combined to make the 25%.
- D. Refusal to maintain body weight over a minimal normal weight for age and height.
- E. No known physical illness that would account for the weight loss. (p. 69).

While the DSM III criteria do not preclude the diagnosis of anorexia nervosa in males as the Feighner criteria do (the former alludes to the presence of amenorrhea, but it is not included in the diagnosis), they do not differentiate between anorexics that pursue the drive for thinness by vomiting versus those who pursue it by restricting their intake--a differentiation that has received a great deal of attention (Beumont, George & Smart, 1976; Casper, et al. 1980; Crisp, Hsu & Harding, 1980; Frankenburg et al. 1982; Garfinkel & Garner, 1982; Garfinkel, Moldofsky & Garner, 1980; Garner, Garfinkel & O'Shaughnessy, 1985; Neuman & Halvorson, 1983; Russell, 1979, 1985; Wold, 1983).

## The Development and Maintenance of Anorexia Nervosa

### Overview

Although anorexia nervosa does occur in males, it has been a consistent epidemiological finding over the past several years that females account for the vast majority of cases (Bemis, 1978; Garfinkel & Garner, 1982; Garner, Garfinkel & Olmsted, 1983). Many factors have been suggested to account for this overrepresentation of females in the anorexia nervosa literature. Two sets of factors that have been suggested to play a role in the development of anorexia nervosa in females may be referred to as the "Pubertal position," (Crisp, 1970; 1980; 1983; Crisp, & Burns, 1983; Crisp, Hsu, Harding & Hartshorne, 1980) and the "Sociocultural position" (Garfinkel & Garner, 1982; Garner, Garfinkel & Olmsted, 1983; Schwartz et al., 1983). Both sets of factors provide some evidence as to the development of anorexia nervosa as well as to the preponderance of female versus male anorexics. Both positions suggest somewhat overlapping mechanisms by which females develop anorexia in a 9 to 1 ratio over males (Andersen, 1985; Garfinkel & Garner, 1982; Gross, 1982).

Puberty is a time of profound emotional and physiological change for both males and females. The apocrine glands which have been inactive until puberty now become active, contributing to the stale body odor that is abhorred by society. Although males and females have a similar number of facial hair follicles, with the development of puberty and the rush of androgens, males manifest beards which demarcate men from boys and males from females. In addition, the well known vocal pitch breaks or "voice

cracking" that occur at puberty, albeit more noticeable in males is a source of embarrassment for both sexes.

However, one of the most blatant physiological changes noted at puberty, which in turn may prove to be the most significant contributory factor in the overrepresentation of anorexia nervosa in females is the increase in body proportions.

Triggered by her estrogens, the adolescent girl's genitals increase in size and sensitivity, her mammary ducts enlarge, her uterus expands and her pelvis widens. Her ovaries and Fallopian tubes ready themselves for their reproductive function and menstruation begins. Coming of age is marked externally by the appearance of fatty tissue that cushions the pelvic area and mammary glands-the distinctly female soft flesh, the ideally feminine rounded curves of the breasts, hips, buttocks and thighs. Reproductive maturation gives a young woman her figure, the somatic emblem of her sexual essence (Brownmiller, 1984, p. 27).

Although the male's genitals also grow in size and sensitivity, his increased overall size is the result of greater muscle mass in his arms, chest, back, shoulders and legs. Brownmiller (1984) provides some insight as to the significance of the differential pubertal hormonal changes in the sexes:

The estrogenic property that adds soft fat to the female body has been used with great success by poultry breeders who want to fatten and tenderize their products for the market, but testosterone would make for a mighty tough chicken (1984 p.27).

At puberty males increase in skeletal frame size in all directions to a greater extent than do females, with the exception of hip size. Puberty, at its "best" then appears to give males what our culture prizes for that sex, "broad shoulders, big bones and rippling muscles". At one point in history, puberty was equally "kind" to females--but not now. The female shape which is prized by our present day culture is more similar to the prepubertal rather than the pubertal shape.

It is suggested that it is a combination of these differential pubertal changes and sociocultural norms for males and females that contribute to the overrepresentation of female anorexia nervosa in our culture.

### Pubertal Factors

The German term describing the anorexic syndrome is "Pubertätsmagersucht", which literally translated means "leanness passion of puberty" (Andersen, 1985). To many authors, anorexia nervosa is a disorder of puberty. Anorexia nervosa occurs most often during puberty, and is most probable in young women experiencing early pubertal onset (Crisp, 1970; Crisp, Hsu, Harding, & Hartshorne, 1980; Crisp, Palmer & Kalucy, 1976).

When the disorder occurs later in a woman's life, it is thought that this is a manifestation of unresolved pubertal conflicts (Crisp, 1983). According to Crisp (1970; 1980; 1983), the pubertal anorexic is unprepared for adulthood and all of the expectations placed upon her during this new stage (dating, sexuality, new responsibilities). She therefore dreads, almost phobically, the physical changes of puberty (increased weight in hips, breast development, and onset of menses).

The cessation of eating provides an avenue by which the anorexic avoids "crossing the barrier" into puberty (Crisp, 1970; 1983). Greater weight loss "is simply an added safeguard... a safe distancing of herself from the danger threshold" (Crisp, 1983, p. 22). The weight loss then serves as a form of "biological regression", delivering the anorexic female to the "safer" state of pre-pubescence (Crisp, 1980; 1983).

Fear of losing control over eating is not just a fear of gaining weight, but a fear that any weight gain will result in the feared consequences of puberty (Crisp, 1983). Table 6 summarizes Crisp's speculations as to what transpires for the prepubertal female as she crosses the "experiential gulf" generated by the process of puberty.

Crisp's "Pubertal position" is widely accepted, but is based solely on his extensive clinical experience, with little empirical support. From this viewpoint, the anorexic "regresses" to a safer state where she is more closely tied to her parents. Greater dependency on parents provides a shield against her pervasive feelings of ineffectiveness and the difficulties with autonomy and personal identity that fill the anorexic's life (Crisp, et al., 1980; Garfinkel & Garner, 1982). It is not uncommon for an anorexic female to appear and act younger than she actually is, rejecting the female sexual role and reverting to a time in her life when she did not have to deal with such issues as personal responsibility.

**Table 6. The Experiential Gulf Generated by the Pubertal Process and Some of Its Origins**

<u>Prepuberty</u> >>>>	<u>Puberty</u> >>>>	<u>Postpuberty</u>
<p>Asexuality</p> <p>The family and its mores and social currencies</p> <p style="padding-left: 20px;">Traditional Religious</p> <p style="padding-left: 20px;">Masked indifference/ambivalence</p> <p>Dependent</p> <p>Compliant</p> <p>Controlled</p> <p>Loved</p> <p>Possessed</p> <p>Esteemed</p> <p>Parental values</p> <p>Parental "secrets" maintained</p> <p>Parents' incompatibilities concealed</p> <p>Family conflict avoided</p> <p>Parents together</p> <p>Like father</p> <p>Like mother</p> <p>Academically committed</p>		<p>Sexuality (and associated fatness)</p> <p>The outside world and its mores and social currencies</p> <p style="padding-left: 20px;">"Progressive" Nonreligious</p> <p style="padding-left: 20px;">Exposed indifference/ambivalence</p> <p>"Independent"</p> <p>Rebellious</p> <p>Impulsive</p> <p>Rejected</p> <p>Abandoned</p> <p>Devalued</p> <p>Peer values</p> <p>Parental secrets</p> <p style="padding-left: 20px;">exposed by reenactment</p> <p>Parents' incompatibilities revealed</p> <p>Family conflict exposed</p> <p>Parents split</p> <p>Like mother (and rejected by father)</p> <p>Like father (and rejected by mother)</p> <p>Academically indifferent</p>

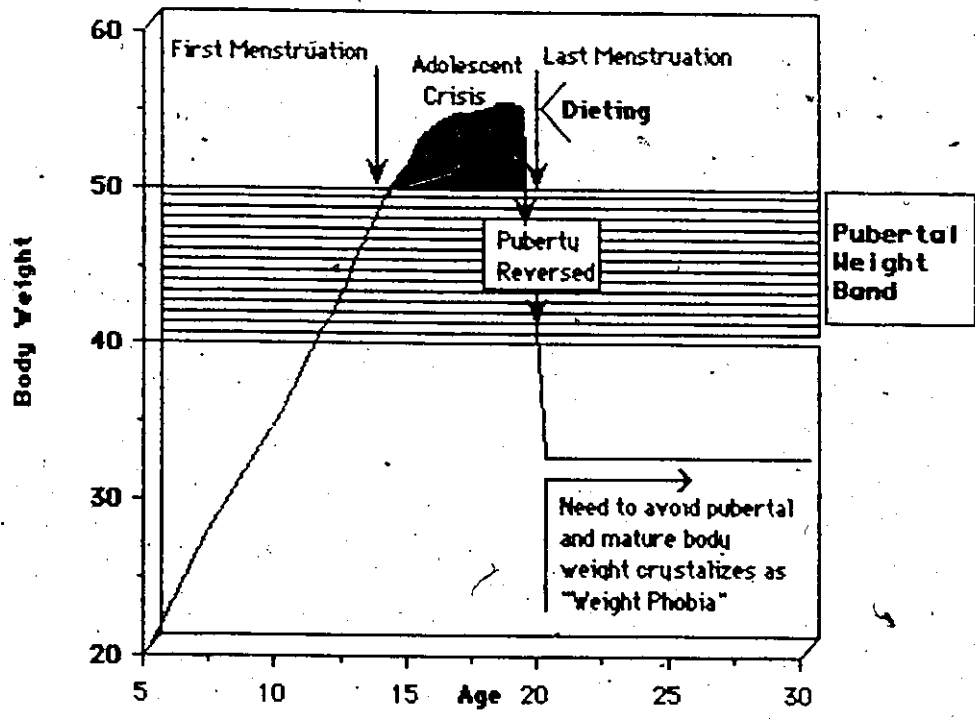
Taken from Crisp (1983, page 18).



Figure 1 is a diagrammatic representation of the evolution of primary anorexia nervosa as suggested by Crisp (1983). Over months an adolescent female begins to fear her own maturity, resulting in the development of anorexia nervosa. When the child reaches the age of 12 or 13, she approaches the "pubertal weight band". At this point the young woman experiences a rapid weight gain, culminating in her first menstruation. As the pubertal weight gain increases, so do feelings of ineffectiveness. Eventually, the potential anorexic can no longer tolerate the "threatening individuality" of puberty (the darker summit on Figure 1). Anorexia nervosa becomes the means by which she tries to reverse both the physical and psychological aspects of the pubertal process. When she "succeeds" at reversing the pubertal process (weight below pubertal weight band), she is faced with the dilemma of keeping her weight below this critical level. A vicious cycle is created--the idea of losing control over her eating and recrossing the pubertal weight band results in panic or phobic response and, subsequently, increased fasting (Crisp, 1983).

Figure 1.

Some Mechanisms in Primary Anorexia Nervosa



Taken from Crisp 1983 page 16.

### Sociocultural Factors

Figure 1 illustrates Crisp's contention of what transpires for a young woman experiencing the adolescent crisis of autonomy, resulting in anorexia nervosa. It is not clear, however, why this adolescent crisis should result in anorexia nervosa, rather than some other disorder, such as delinquency. The sociocultural position suggests why a young woman would adopt anorexia nervosa as a mechanism to resolve these overwhelming feelings of ineffectiveness, rather than some other vehicle.

A review of the literature clearly indicates that the increased incidence of anorexia nervosa in the last few decades is strongly related to the emphasis placed on, and pressures to achieve, thinness, youth, physical attractiveness and fitness in our culture (Bruch, 1978; Garfinkel, 1981; Garfinkel & Garner, 1982, 1983; Garner & Garfinkel, 1980; Garner, Garfinkel & Olmsted, 1983; Katz, 1985; Selvini Palazzoli, 1974). One only has to look to the media to clearly see the portrayal of thin, physically fit, attractive women as possessing greater power and success (Garfinkel & Garner, 1982; Garner, Garfinkel & Olmsted, 1983). Young women come to believe that in order for them to acquire such power and success, they too must be thin, and appear young, fit and attractive. It is not surprising that women believe that thinness is the most important aspect of physical attractiveness (Garner, Garfinkel & Olmsted, 1983). The changing roles of women associated with the feminist movement have further accentuated the polar positions of reality and unobtainable societal expectations (Garner, 1985).

Although there is a virtual plethora of dieting and fitness programs available for young women, the actual method of weight loss is not important as long as one can achieve the desired shape. The societal

message is clear to these young women: "Be thin at all costs".

One particularly popular form of self-control for women has been dieting. Dieting is a security gesture, a device for asserting control--"at least my body is my domain, and I can resist the threatening chaos of a formless world in the narrow confines of my skin." (Garfinkel & Garner, 1982, page 106-107)

For a young woman, her continual weight loss becomes an indication of success, as well as a sign of status. There is a great deal of social reinforcement for the thin young woman. Friends tell her how good and thin she looks. More importantly, weight loss becomes something that she now can (and must) control. The possibility of weight gain would be disastrous. Since any increase in weight would signify a loss of control, the mere thought of gaining weight induces panic in the anorexic.

The saliency of sociocultural factors in the development of anorexia nervosa receives logical support from the literature on the epidemiology of the disorder. Societal directives toward thinness are much more strongly directed toward women than men. While young girls are taught that you "can't be too rich or too thin", young boys are told that to be worthwhile one must be physically strong and avoid becoming a "98 pound weakling".

Garner, Garfinkel, Schwartz and Thompson (1980) empirically demonstrated the increasing importance placed on female thinness in recent years. In an archival analysis of women's magazines, the authors found an increase in diet related articles over a 20 year period. Garner et al. (1980) also reported a significant trend toward slimness in Miss America pageant winners and Playboy models over the same period of years:

The movement toward a thinner shape for the ideal standard of

beauty is more notable considering that, due to improved nutrition, the average female under 30 yr. of age has become heavier in the past 20 yr. according to the recently revised actuarial statistics. Thus while magazine centerfolds, Pageant participants, and presumably the prevailing female role models have been getting thinner, the average women of a similar age have become heavier (Garner et al., 1980, pp. 489-490.)

Thus young women in our culture are faced with the dilemma of finding a weight that is biologically comfortable and at the same time psychologically tolerable. It seems that, for the anorexic, the former is sacrificed in pursuit of the latter.

The family is another area where the effect of sociocultural factors is evident. There is a great deal of conflicting research on what constitutes the typical anorexic family (Garfinkel & Garner, 1982). Although the literature on the family's contribution to the development and maintenance of anorexia nervosa will not be included here, it is important to note some of the more unequivocal results. Garfinkel (1981) found that the families that eventually produce an anorexic child typically place great value on physical beauty and are also deeply concerned about their reputation in the community.

Andersen (1985) describes the typical anorexic family as being emotionally distant, generally lacking "moderation and balance". Not surprisingly, the "anorexic family" as a whole tends to be preoccupied with appearance and tends to overvalue weight control (Branch & Eurman, 1980).

Both the sociocultural and the pubertal positions suggest possible contributors to the development of anorexia nervosa in young women. It should be noted that the two viewpoints are not mutually exclusive.

Frankenburg et al. (1982) comment that anorexia nervosa has a greater likelihood of occurring when a child reaches puberty because of peer pressure, rather than purely being the result of biological mechanisms. It is possible that the biological mechanisms at work during puberty make the young woman more susceptible to sociocultural factors. Furthermore, it may be that the differential impact of the biological and sociocultural factors on young women as compared to young men leave the former so much more susceptible to developing anorexia nervosa.

### Anorexia Nervosa in Males

Throughout the literature, anorexia nervosa has been a label applied almost exclusively to young females. The vast majority of research in the area of anorexia nervosa makes no mention of males (Muni-Brander & Lachenmeyer, 1986). Interest has recently developed in ascertaining the parameters of this previously neglected area of anorexia nervosa in males (Andersen, 1985; Beumont, Beardwood & Russell, 1972; Bruch, 1978; Crisp, 1983; Crisp & Burns, 1983; Dolezal, 1983; Garfinkel & Garner, 1983; Garner, Garfinkel & Olmsted, 1983; Halmi, 1974; Harding, 1985; Hawkins & Clement, 1980; Hogan, Heurta and Lucas, 1974; Leichner, 1985; Muni-Brander & Lachenmeyer, 1986; Sterling & Segal, 1985; Vandereycken & Meermann, 1984; Wilson, 1982).

The incidence of anorexia nervosa in males is assumed to be so low that even as recently as 1984, 40% of internists and 25% of psychiatrists believed that anorexia nervosa was a phenomenon solely affecting females (Vandereycken & Meermann, 1984). Taipale, Larkio-Miettinen, Valanne, Moren and Aukee (1972) stated that there were no cases of chronic male

anorexia nervosa in the literature as of that time. Garfinkel and Garner (1982, 1983) have speculated that as few as 5% of all anorexics are male. These authors speculated that while the incidence of anorexia nervosa in females is increasing, the incidence in males is actually decreasing (this latter finding is supported by Bruch (1978) and Jones et al. (1980)). Halmi (1974) commented that the rarity of male anorexia nervosa makes speculation of its incidence difficult, since the results of any investigation will inevitably yield sample sizes too small to be of value.

There is a paucity of empirical information on male anorexia nervosa. Virtually the entire body of knowledge on male anorexia nervosa is based on case study and personal observation. Bruch pioneered the study of male anorexia nervosa. Her 1971 report on anorexia nervosa in males was based on 9 case studies over a 25 year period. Only 5 of these males were diagnosed as primary anorexics. Bruch considered male anorexia nervosa to be virtually the same syndrome as female anorexia nervosa. Both sexes have the same concern with weight and size. In addition, both sexes seem to be driven by the relentless pursuit of thinness which accounts for the disordered eating behaviour. Like his female counterpart, the male anorexic has no true loss of appetite. Bruch further speculated that for the male anorexic, there also exists a similar drive for achievement, body image disturbance, inaccuracy in perception of bodily states, and an all pervasive sense of ineffectiveness as is found in the female anorexic. Bruch's conceptualization about the state of the male anorexic is limited to these very few cases and may not be generalizable, a point which she herself concedes.

Crisp (1983) has speculated that a male's desire for thinness is precipitated from within the framework of a gender identity problem (homosexual conflict) or from adolescent obesity. Vandereycken and Meermann (1984) maintain that homosexual men might be more likely to develop an anorexia nervosa than heterosexual men since there is a greater stress for a more "feminine shape" in the gay subculture.

The first systematic review of male anorexia nervosa was reported by Beumont et al. (1972). They reported on 240 cases of which only 25 met their definition of anorexia nervosa. These authors agreed with the contention of Bruch (1971), Crisp (1983) and Hogan et al., (1974) that anorexia nervosa is expressed similarly in both females and males. However, Andersen (1985), Garfinkel and Garner (1983), and Humphries, Wrobel and Weigert (1982) do not agree that male anorexia nervosa is similar to female anorexia nervosa and suggest that anorexia nervosa "in males is a special example of this process" (Garfinkel & Garner, 1983, p. 4). Taipale et al. (1972) suggest that the emotional disturbance of anorexia nervosa is much more serious in boys than girls. Garfinkel and Garner (1982) feel that the societal pressures to pursue thinness are absent in males and therefore lead males toward developing difficulties in other areas of living, such as homosexual conflicts.

Andersen (1985) considers male anorexia nervosa to be an underdiagnosed anorexia nervosa, rather than being a somewhat rare phenomenon, as is the prevailing view. Sterling and Segal (1985) report that a diagnosis of male anorexia nervosa is difficult to make, since so few patients will be seen with the disorder. Additionally, since amenorrhea has often been assumed to be the cardinal criterion for the label of anorexia



nervosa (Feighner et al., 1972; Vandereycken & Meermann, 1984), males could not be diagnosed as anorexic, regardless of their symptoms.

Andersen suggests several other reasons that male anorexia nervosa is underdiagnosed. First, males may be more embarrassed to admit their symptoms to others than females. Second, males may believe the stereotyped image of anorexia nervosa being a woman's problem and thus assume that they are not vulnerable. Third, medical doctors may look into other more obscure reasons for weight loss rather than entertain the possibility of a male patient having anorexia nervosa. Finally, Andersen points out that anorexia nervosa in males may manifest itself with features that "obscure the central psychopathological symptoms, such as an emphasis on somatic complaints" (Andersen, 1985, p. 150).

Andersen suggests that male anorexics should be divided into three distinct subtypes based on age of onset: early or prepubertal onset (ages 9 to 12), typical or adolescent onset and late onset during the late twenties to forties. Contrary to Garfinkel & Garner (1982), Andersen feels that sociocultural pressures are actually increasing for males and that slightly overweight middle-aged executives or managers, for example, may be encouraged or required by their companies to reduce their weight and enhance their physical appearance. Andersen does concede, however, that the cultural expectation for thinness is still by far a female concern. Males are typically more concerned about increasing their muscle tone and proficiency at athletic endeavors. The sociocultural pressures towards anorexia nervosa or bulimia on males may be most apparent in wrestlers and jockeys--possibly resulting in an increased prevalence of male anorexia nervosa in these and any other professions which reward thinness

(Andersen, 1985; Moriarty, 1986). It is therefore feasible that both females and males experience the same degree of dissatisfaction about their bodies given the proper incentive.

In the most comprehensive review of male anorexia nervosa to date, Sterling and Segal (1985) note that there is virtually no research comparing patterns of male and female anorexia nervosa. It was the purpose of their report to review the syndrome of anorexia nervosa in males, and provide such a comparison based on the data extracted from 32 case reports from 14 sources reported in the literature since 1972. This article is significant and deserves further mention because it is one of the first empirical investigations of males with anorexia nervosa.

Sterling and Segal's conclusions are based solely on extrapolation from case studies and therefore are subject to certain limitations. According to Kazdin (1980), the case study is valuable in the early stages of the development of a body of research such as in the area of males with anorexia nervosa. The individual case study, however, has the severe limitation of being scientifically questionable and has the inability to unambiguously identify precise events that lead up to the behaviour in question, except perhaps for those behaviours that the researcher and/or client feel are important.

Although Sterling and Segal did attempt some standardization in their review by applying DSM III criteria to these cases, this was done post hoc and does not avoid the above mentioned methodological difficulties. Sterling and Segal do acknowledge that future investigations (both empirical and case study) "should adhere to uniform diagnostic criteria, preferably DSM III, and research should administer and include objective data from commonly used

psychodiagnostic tests" (1985, pp. 570-571).

With the preceding caveats in mind, Sterling and Segal's results can provide some insight into the parameters of males with anorexia nervosa. It is important to note that the results presented were not subjected to any form of statistical analysis. The authors considered anything that was found in the majority of the 32 case reports to be "significant". For example, the age of onset reported was that found in 94% of the cases reviewed. They report an age of onset for male anorexia nervosa between the ages of 10 and 18, with a mean age of onset at 14 years. This is earlier than the typical age of onset for females, which they report is 17 or 18 years. As with the age of onset in females, there is a some variation in the literature. Crisp and Burns (1983) report a later age of onset in males which more closely resembled the onset in women (range 12 to 25 years with an average age of 17 years 2 months), while Bruch speculated that the age of onset would be prepubertal.

The majority of males in the Sterling and Segal account were slightly overweight prior to the onset. This coincides with the reports of Andersen (1985) and others. Similar to female anorexics, males are also seen to be somewhat obsessive-compulsive, to be highly success and achievement oriented, and to have intelligence levels that are in the average to above average range. There were suggestions of a similar distortion of body image, preoccupation with food, self-induced vomiting and purgative abuse, and decreased interest in sex in both male and female anorexics.

Sterling and Segal reported other similarities between male and female anorexics. Male anorexics, and their female counterparts, were found to develop anorexia nervosa in reaction to peer criticism. This suggests that there may be some societal pressures for thinness in both males and

females. Sterling and Segal conclude that male and female anorexics present practically the same clinical condition and recommend that future research "attempt to find correlates between the clinical characteristics of female anorectics and particular subgroups of males" (Sterling & Segal, 1985, p. 570).

The literature to date on males with anorexia nervosa has consisted largely of either anecdotal or clinical accounts. Few psychometrically valid studies have been reported with male anorexics. One of the first reports in the literature using standardized questionnaires with male subjects was a recent study by Muni-Brander and Lachenmeyer (1986). Their study investigated various aspects of adolescent male anorexia nervosa in a nonclinical sample using a standardized anorexia nervosa questionnaire (the Eating Attitudes Test, Garner & Garfinkel, 1979) and two other questionnaires.

Specifically, the authors wanted to determine the effects of socioeconomic status (SES) and athletic involvement on eating disorders. Subjects were recruited from one upper and one lower class high school. Degree of athletic involvement was not related to eating disorders. Results indicated that nearly 50% of the sample binged, approximately 25% induced vomiting to control their weight and approximately 4% met the DSM III criteria for bulimia. The authors concluded that there is a very high prevalence of eating disorders in young males in both SES samples. Muni-Brander and Lachenmeyer (1986) recommend that, in light of the alarmingly high rate of possible eating disorders in adolescent males, research must continue to explore its etiology in this group.

Although not primarily directed toward delineating the differences and similarities between male and female, Porter, Morrell and Moriarty (1986) noted some interesting results. Using a shortened version of the Eating Disorder Inventory (Garner and Olmsted, 1984) with 44 children (25 boys and 19 girls, average age 11.88 years), the authors found that females scored significantly higher than males on the Drive for Thinness scale of the Eating Disorder Inventory, while no sex differences were found on the Interpersonal Distrust subscale. It is interesting to note that four of the eight highest subscale scores were from male respondents. Similarly the Perfectionism subscale revealed no sex differences, with two of the highest scorers being male.

Another recent study using the Eating Disorder Inventory was reported by Campbell, Porter and Moriarty (1986). Similar to Porter et al. (1986), this study used standardized measures with a heterogeneous nonclinical population (40 females and 14 males). The focus of the study was on body image distortion in a high risk population such as athletes. The authors were not primarily concerned with the overall differences between males and females. In fact for most of the analyses the male and female groups were combined. A secondary analysis performed on potential sex differences was not significant.

### **Assessment of Anorexia Nervosa**

There are a variety of ways to assess anorexia nervosa in nonclinical populations, each with its own advantages and disadvantages. The authors of questionnaires are quick to point out that their tests alone should not be used as the sole criterion in making a definite diagnosis of an anorexia

nervosa (Garfinkel & Garner, 1982; Garner & Olmsted, 1984; Vandereycken & Meermann, 1984). Such questionnaires, however, can be useful as a standardized, reliable and valid measure for screening those at risk to develop anorexia nervosa as well as for making comparisons across different populations. These assessments also have the virtue of simplifying the data gathering process both in research and clinical settings, thereby facilitating large scale studies (Vandereycken & Meermann, 1984).

There have been just a few assessment devices designed specifically for anorexia nervosa. Some of the more popular scales recently reported in the literature include the Analogue Scale Measurement (Folstein, Wakeling, & De Souza, 1977), the Anorectic Attitude Scale (Goldberg, Halmi, Eckert, Casper, Davis & Roper, 1980) and the Anorexic Behaviour Scale (Slade, 1973). Among those that are available, only a few have provided any psychometric data to support their questionnaire. The Garner group has provided some of the best assessment devices to date. The Eating Attitudes Test (EAT) by Garner and Garfinkel (1979), has been the most widely used and best documented of any anorexic scale (Vandereycken & Meermann, 1984). The EAT is a self-report questionnaire which provides an objective measurement of a range of symptoms commonly found in anorexia (Garfinkel & Garner, 1982; Garner & Garfinkel, 1979; Garner, Olmsted & Polivy, 1983b). It also measures eating behaviours and attitudes toward food and body weight.

### The Eating Disorder Inventory

Garner, Olmsted and Polivy, (1983a, 1983b) and Garner and Olmsted (1984) have recently devised a scale specifically designed to assess anorexia nervosa from a multidimensional perspective, taking into account the

heterogeneity of both anorexic and nonanorexic subjects (Hooper & Garner, 1986). Referred to as the Eating Disorder Inventory (EDI), this scale is now used with great frequency and is rapidly becoming the standard for questionnaire assessment of anorexia nervosa both in clinical and nonclinical samples (Campbell, Porter & Moriarty, 1986; Garner, Garfinkel & Olmsted, 1983; Garner, Garfinkel & O'Shaughnessy, 1985; Garner, Olmsted & Garfinkel, 1983; Garner, Olmsted & Polivy, 1983a, 1983b; Garner, Olmsted, Polivy & Garfinkel, 1984; Heilbrun & Bloomfield, 1986; Hooper & Garner, 1986; Muni-Brander & Lachenmeyer, 1986; Porter et al., 1986; Steinhausen, 1985; Vandereycken & Meermann, 1984). The EDI taps both cognitive and behavioural dimensions of anorexia nervosa. Until the development of the EDI, scales measuring anorexia nervosa and other eating disorders such as the EAT, had the disadvantage of being relevant only for inpatient administration or too narrow in scope, omitting salient information (Garner, Olmsted & Polivy, 1983a, 1983b). The EDI however...

is a multifaceted instrument designed to assess psychological characteristics relevant to anorexia nervosa and bulimia.

Justification for the development of the EDI is based on the growing recognition that anorexia nervosa is a multidimensional disorder with considerable psychological variability across the heterogeneous patient population (Garner, Olmsted & Polivy, 1983b, p.16)

There are several additional reasons as to why the EDI is becoming more popular than the EAT. The EDI is superior to the EAT in assessing the fundamental issues of anorexia nervosa and does more than just measure behavioural symptoms (Andersen, 1985; Garner, Olmsted & Polivy

1983a, 1983b; Heilbrun & Bloomfield, 1986; Vandereycken & Meermann, 1984). In addition to reliably distinguishing between anorexics and nonanorexics, the EDI has successfully differentiated subtypes of anorexia nervosa. On the basis of EDI scores, Garner, Garfinkel & O'Shaughnessy (1985) were able to distinguish normal weight bulimics from anorexic bulimics and restricting anorexics; Garner, Olmsted & Garfinkel (1983) differentiated between anorexic subjects and those merely preoccupied with their weight; Garner, Olmsted, Polivy & Garfinkel (1984) distinguished between anorexics and extreme dieters; and Heilbrun and Bloomfield (1986) differentiated bulimic and anorexic females.

The EDI was theoretically devised "followed by empirical refinement and validation" (Garner, Olmsted & Polivy, 1983a, p. 174). This is in contrast to the EAT which was empirically derived from an initial item pool of reported anorexic symptoms. It is important to note that the EDI was not designed as an improvement or as a replacement for the EAT. The EDI and EAT are used to assess different aspects of anorexia nervosa (Garner, Olmsted & Polivy, 1983a, 1983b; Garner & Olmsted, 1984).

Items for the EDI subscales were generated by clinicians who had both research and clinical experience with anorexia nervosa. A total of 146 questions were solicited from this source (Garner, Olmsted & Polivy, 1983b). From this item pool 11 subscales were developed, each thought to measure one salient construct of anorexia nervosa. In order for a subscale to be included in the final form of the EDI, it had to yield a coefficient of internal consistency of at least 0.80 for the anorexic group. While the authors considered item-scale correlations at the level of  $r=0.40$  desirable, three items with item-scale correlations below this level were retained because of



their contribution to construct validity.

These procedures ensured that only items that could demonstrate an ability to distinguish anorexic from nonanorexic patients were included in the final version of the scale. These rigorous reliability and validity requirements yielded a final scale comprised of 8 subscales.

The subscales of the EDI are:

1) Drive for Thinness (DT)-a reflection of fear of weight gain as well as an intense desire to be thin;

2) Bulimia (B)- assessment of the presence of "bingeing and purging" behaviours and cognitions;

3) Body Dissatisfaction (BD)- reflection of the feeling of dissatisfaction that certain body parts are too large, especially those body parts associated with physical maturation such as breasts, buttocks and hips;

4) Ineffectiveness (I)-reflection of the feelings of hopelessness and worthlessness as well as negative self-concept;

5) Perfectionism (P)- reflection of the excessively high standards and dichotomous thinking to which anorexics characteristically subject themselves;

6) Interpersonal Distrust (ID)- reflection of the difficulties anorexics have in expressing emotions and forming close relationships;

7) Interoceptive Awareness (IA)-reflection of the inability to accurately label and identify emotional and visceral sensations;

8) Maturity Fears (MF)-reflecting the desire to return to a prepubertal state.

It may be argued that if one desired to measure certain traits described by these subscales, it would be simpler to use already validated

scales. For example, the Ineffectiveness subscale claims to assess cognitions similar to that assessed by locus of control and depression questionnaires. Garner and Olmsted (1984) provide evidence for both divergent and convergent validity indices for all subscales. The authors also note that the EDI measures cognitions and behaviours specific to anorexia nervosa and other eating disorders.

Interpretation of the EDI subscale scores in a clinical situation would involve a comparison of the patient's score with the appropriate norms. For use in large scale investigations with nonclinical populations, the EDI can be used as a standardized method for the early detection of those who are weight preoccupied and those who are experiencing the psychological difficulties associated with anorexia nervosa. Those achieving high scores on the Drive for Thinness, Bulimia and Body Dissatisfaction subscales would fit the first category, while those scoring high on the remaining scales (Ineffectiveness, Perfectionism, Interoceptive Awareness, Interpersonal Distrust and Maturity Fears) would fit the latter category. Subjects achieving high scores on all scales would be at risk for developing anorexia nervosa (Garner and Olmsted, 1984).

## Statement of Problem and Hypotheses

### Overview

There has been a great deal of debate as to whether the age of onset and psychological aspects of anorexia nervosa are similar in both sexes. Both the pubertal and sociocultural positions allow for specific predictions on the nature of sex differences in the development and maintenance of anorexia nervosa, but until this point, neither position has utilized psychometrically

valid comparison data in support of their contentions.

There is a great deal of overlap between the pubertal and the sociocultural points of view. These two positions are therefore not contradictory, but are complementary, with points of consensus. Both viewpoints emphasize that pubertal onset is a period of psychological turmoil for both sexes, but that the outcome of this turmoil is different for males and females. Puberty is more likely to lead to anorexia nervosa in females because of a type of sociocultural/biological "double bind." While a young woman is experiencing a natural increase in her hip, breast, thigh and buttocks size as well as the onset of menses, she is lead to believe that these biological changes make her less valuable as a person.

The combination of pubertal crises and sociocultural factors may direct young women towards developing anorexia nervosa as a possible solution to prevent and/or decrease the unwanted weight increase. Young men, on the other hand, are more likely to develop other psychological sequelae in reaction to their "crisis of adolescence", including delinquency, drug abuse or homosexual conflicts (Crisp, 1983).

It is expected, then, that the differences in reaction to pubertal and sociocultural factors are in the eventual choice of symptom (anorexia nervosa as opposed to any other disorder), not in the severity of the overall psychopathology. Males and females would be expected to score differently on measures related to eating and body shape but not on fundamental aspects of psychopathology since both sexes experience some pubertal crises.

### EDI Reliability

One of the main reasons the EDI was used in the present investigation was the high reliability and validity data Garner has provided for the scale. The EDI was developed with great psychometric rigor. Garner carefully evaluated both validity and reliability data, excluding any items that did not have internal consistency coefficients of at least 0.80. Furthermore, Garner and Olmsted (1984) have promoted the use of the EDI "in both individual and group settings," and note that it "has been used with respondents as young as 12 years of age with an examiner present to answer questions" (p. 10).

Although most contemporary authors would agree that anorexia nervosa is a phenomenon of adolescence, it is interesting to note that the majority of research using the EDI has been performed on subjects over 19 years of age. More importantly, the original reliability and validity data compiled on the EDI have not been with adolescents, but with university aged subjects. The average age for the anorexic group in the development of the EDI was 21.8, while the comparison groups had an average age of 19.9 (Female) and 20.3 (Male).

Although the EDI may have been administered to adolescents during the development of the scale, there are no currently available data to suggest that it is a reliable measure for this population. Norms for 981 female high school students from an upper-middle class area of Chicago are provided by Garner, but no further psychometric information was offered for these data. It is not known what the distribution of ages was (although we are told that the range was 14 to 18), but of greater significance, reliability data were not provided for specifically this age group. This is an

important consideration for several reasons. Garner has provided a great deal of empirical validation for the EDI's psychometric strength in young adults, but, if anorexia nervosa is a phenomenon of adolescence, it is essential to ascertain whether or not the EDI can reliably assess the presence of anorexia nervosa in those most likely to develop the disorder.

Since the reliability of the EDI for adolescents has not been determined, such an investigation would be a requisite before the scale can be utilized in any research with this population (Nunnally, 1978). Although the EDI has been well validated with young adults, it is possible that the EDI may not be as reliable a measure with a younger population. Thus before the main thrust of the present project was undertaken, an examination of the reliability of the EDI for males and females aged 11-19 took place.

Once the reliability of the EDI was determined for an adolescent population, it would then be possible to shed light on the sociocultural and pubertal views of anorexia nervosa. This would be accomplished by exploring two questions raised by these positions: a) What psychometrically measurable differences exist in a nonclinical population between males and females aged 11-19 on a reliable measure of eating attitudes and behaviour which relate specifically to the development of anorexia nervosa; and, b) At what age do these differences emerge? To accurately evaluate the extent of these potential differences and to determine the processes producing these differences, several hypotheses were developed:

### Hypotheses

It is hypothesized that the overrepresentation of anorexia nervosa in young women reported in the literature is not an indication of overall

greater psychological disturbance in females than is found in males. Rather, it is predicted that sociocultural factors and the biological growth manifested at puberty will interact to increase the tendency to develop patterns leading to anorexia nervosa in young women, but not young men.

In other words, it is hypothesized that the propaganda disseminated in accordance with the sociocultural position clearly directs young women toward developing attitudes leading to a relentless pursuit of thinness and "proper" body shape. This combines with the arrival of a new undesirable "fatness" (in all the "wrong" places), and the result is a cultural mandate responsible for directing young women to develop anorexia nervosa. The behaviours and attitudes related to anorexia nervosa are adopted in an attempt to deal with this new undesirable body shape. Since this sociocultural propaganda is not directed as strongly toward young males and since the male pubertal weight gain is not perceived as threatening, males would not be expected to manifest the anorexic lifestyle as an attempt to control the onslaught of pubertal weight gain.

The pubertal position suggests that with the onset of puberty, females would be more likely to succumb to the sociocultural pressures which dispose them toward the development of anorexia nervosa in greater numbers than males. Thus as females get older, the increasing pressures of both pubertal and sociocultural factors would result in an increased emphasis on weight control and body image.

The pubertal and sociocultural positions would predict that significant differences would appear on the EDI subscales Drive for Thinness and Body Dissatisfaction for females but not males, as they got older. These sex and age differences would not be expected on any other EDI subscales. No sex or

age differences were expected on the EDI subscale measuring bulimia since bulimic behaviour typically has a later age of onset than the age of the subjects in the present study (Neuman & Halvorson, 1983).

Specifically then, it was predicted that a sex and an age by sex interaction effect would be uncovered on Drive For Thinness and Body Dissatisfaction. A main effect for age (group) might or might not occur since only females (and not males) are expected to increase in Drive for Thinness and Body Dissatisfaction scores. This hypothesis will evaluate the extent of the interaction between age and sex which is predicted to be a contributing factor in the development of differences between different aged males and females. Figure 2 is a pictorial representation of these predictions. It should be noted that although no differences were expected on the remaining EDI subscales which measure the "fundamental aspects of the psychopathology of anorexia nervosa" (Garner, Olmsted & Polivy, 1983, p. 29), the results of these subscales were included in order to maintain the integrity of the EDI as a whole. That is, since available reliability data were compiled on the full EDI, all subscale data were included for the purposes of additional analyses and will be reported after the main results.

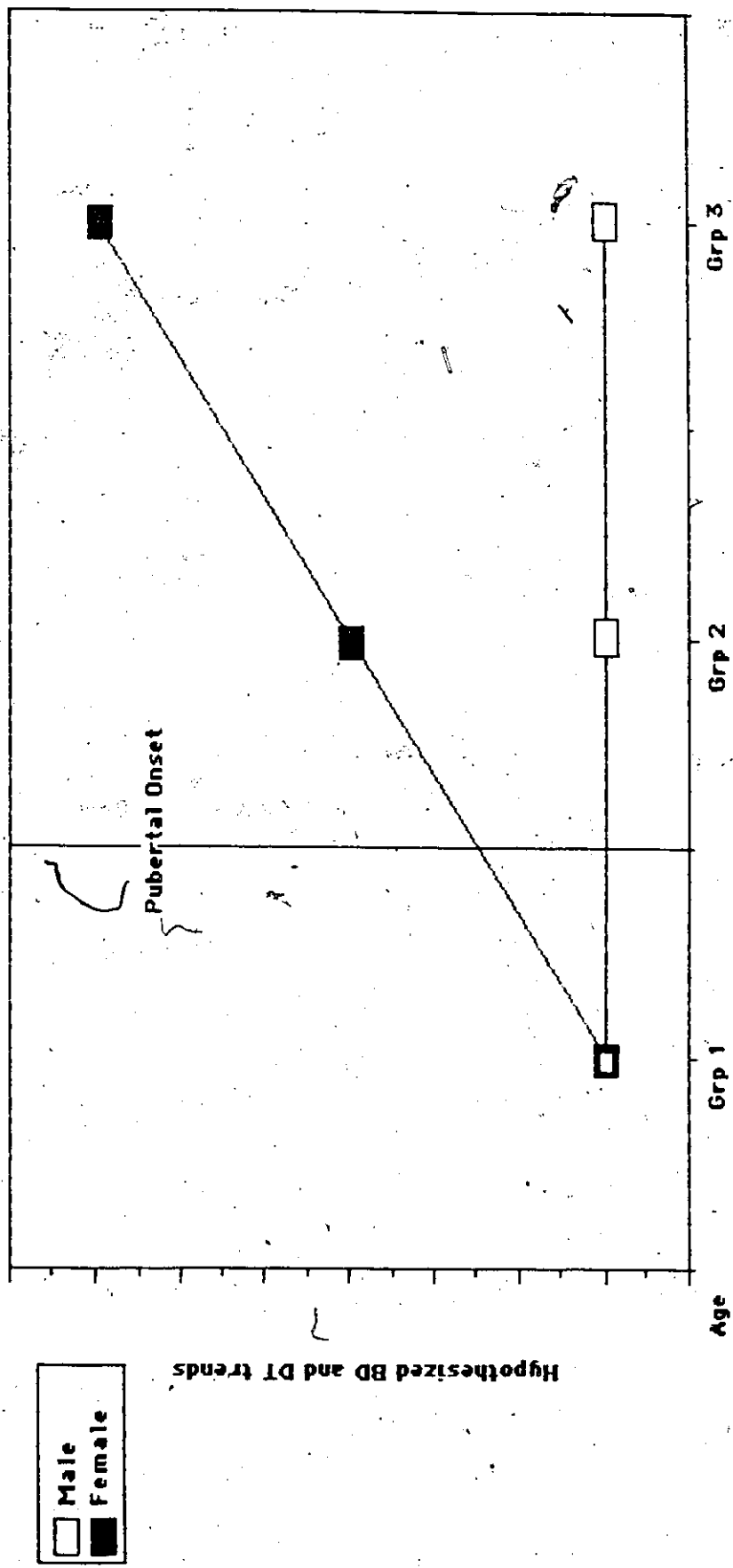


Figure 2. Predicted Trends On Body Dissatisfaction and Drive for Thinness.



## CHAPTER II

### METHODOLOGY AND PROCEDURE

#### Subjects

Approximately 900 elementary and high school students (average age 13.9 years) from 18 elementary and high schools in the Windsor and Essex county were given the Eating Disorder Inventory (EDI) as part of a separate project, the development of a preventative curriculum for eating disorders, which was conducted by the Bulimia and Anorexia Nervosa Association (BANA). All students were assured of the confidentiality of their responses and as such were not required to indicate their name.

Six hundred and thirty seven students' pretest EDI questionnaires were extracted from a total sample of 1400 questionnaires. The remainder of the questionnaires (the posttests) were not used, due to the possible confounding effect of subjects' accruing knowledge about anorexia nervosa through the BANA preventative curriculum. In addition to EDI subscale scores, age, grade and sex data, demographic information such as location (rural or urban) and type (Catholic or public school) of school is also provided. All questionnaires were administered during regular class time by the students' usual teacher. Both teachers and students were blind to the purpose of the present study. Although participation was voluntary, all students were provided with EDI forms to complete and all students participated. Both male and females served as subjects, with an age range of 11 to 20 years. This yielded a sample of 637 subjects comprising 206 males and 424 females with 7 subjects not reporting their sex. Table 7 provides a breakdown of this sample.

**Table 7. Demographic Composition of Sample**

<u>Males N=206</u>			<u>Females N=424</u>		
<u>Mean Age(SD): 13.5(1.7)</u>			<u>Mean Age(SD): 14.1(1.8)</u>		
<u>Grade</u>	<u>Freq</u>	<u>Percent</u>	<u>Grade</u>	<u>Freq</u>	<u>Percent</u>
6	20	9.7	5	1	0.2
7	69	33.5	6	24	5.7
8	72	35.0	7	99	23.3
9	9	4.4	8	83	19.6
10	1	0.5	9	106	25.0
11	31	15.0	10	45	10.6
12	4	1.9	11	52	12.3
			12	14	3.3

<u>Age</u>	<u>Freq</u>	<u>Percent</u>	<u>Age</u>	<u>Freq</u>	<u>Percent</u>
11	12	6.1	11	18	4.3
12	52	26.3	12	73	17.3
13	69	34.8	13	92	21.9
14	24	12.1	14	77	18.3
15	5	2.5	15	67	15.9
16	19	9.6	16	57	13.5
17	13	6.6	17	25	5.9
18	2	1.0	18	5	1.2
19	2	1.0	19	6	1.4
Not reported	8		20	1	0.2
			Not reported	3	

<u>School type</u>	<u>Freq</u>	<u>Percent</u>	<u>School type</u>	<u>Freq</u>	<u>Percent</u>
Separate	38	18.4	Separate	49	11.6
Public	168	81.6	Public	375	88.4

<u>School Locale</u>	<u>Freq</u>	<u>Percent</u>	<u>School Locale</u>	<u>Freq</u>	<u>Percent</u>
Rural	51	24.8	Rural	84	19.8
Urban	155	75.2	Urban	340	80.2

Subjects were further grouped into six classifications based on age and sex. Eleven subjects did not indicate their age and therefore could not be included in this grouping and were subsequently excluded from further analysis. A total sample of 619 subjects constituted the experimental groups. Table 8 provides a listing of the composition of the various groupings.

**Table 8. Mean(Standard Deviation) Age and Size of Experimental Grouping**

	<u>Group 1 (11-12 yrs)</u>	<u>Group 2 (13-14 yrs)</u>	<u>Group 3 (15-20 yrs)</u>	<u>Total</u>
<u>Males:</u>	11.81(0.39) N=64	13.25(0.44) N=93	16.44(0.95) N=41	N=198
<u>Females:</u>	11.80(0.40) N=91	13.46(0.50) N=169	15.94(1.07) N=161	N=421
<u>Total:</u>	N=155	N=262	N=202	N=619

### Procedure and Instrumentation

The psychometric superiority of the EDI over any other anorexia nervosa assessment device was elaborated on earlier and will therefore not be repeated. It is important to note however, that the EDI was especially appropriate for the present investigation because of its ease of administration by nonpsychologists:

The EDI need not be administered by someone specially trained, in psychology, however, the examiner should have an understanding of the dimension being tapped by each subscale

so that accurate clarification of any item can be provided upon request. Test interpretation should always be performed by someone with special training in psychometric assessment (Garner & Olmsted, 1984, p. 11).

Since Garner and Olmsted permit the administration of the EDI in group settings, questionnaires were completed in class, during regular class time. Subjects were blind to what the EDI was assessing, and were not aware of the purpose of the present study. Following Garner and Olmsted's (1984) suggestions for administration of the EDI, teachers were provided with the following instructions:

**High school teachers:** before teaching the units, ask students to fill out the Eating Disorder Inventory forms supplied.

Instructions are on the forms. This will take your class about 15 minutes; students should not discuss their answers and teachers should give the minimum of guidance. We will score these forms.

**Elementary school teachers:** use this test at your discretion i.e. only if you think that your class can handle it.

In addition to these written instructions, each teacher was interviewed and was provided with material to facilitate an understanding of anorexia nervosa. Teachers were asked to explain to his/her students that the EDI had no right or wrong answers, would not be graded and that there was no time limit. Teachers were also asked to promote a noncompetitive environment during testing. In order to insure confidentiality, subjects were not required to provide their name on the EDI form.

The EDI is a 64 item forced choice self-report scale which is divided

into 8 subscales. Appendix A provides a listing of all EDI items. The EDI is designed to measure both attitudinal and behavioural aspects common to anorexia nervosa and bulimia. Although the EDI is usually used with clinical populations, it can also be used as a screening device to detect those at risk for developing anorexia nervosa and bulimia (Garner & Olmsted, 1984).

### Assessment of Reliability

In order to evaluate Garner and Olmsted's (1984) contention that the EDI can be used as a meaningful assessment device with subjects as young as 12 years old (or 11 years old as in the present study), an analysis of reliability was performed.

Ninety-six subjects, all from the same elementary school, were excluded from the reliability analysis because they did not complete the entire EDI form. This occurred because of one particular teacher who, on her own initiative, eliminated 3 items from the EDI because she felt that they were inappropriate for this age group (\*29-"As a child I tried very hard to avoid disappointing my parents and teachers"-from Perfectionism, \*35-"The demands of adulthood are too great" and \*39-"I feel happy that I am not a child anymore"-both from Maturity Fears). This yielded a sample size for the reliability assessment of 354 females and 169 males for a total sample size of 523 for this analysis.

A decision was made to exclude these ninety-six subjects from the subject pool for the reliability estimates. Including incomplete questionnaires in an assessment of internal consistency would affect the accuracy of the reliability coefficient, since it would, in effect, constitute a separate form (albeit only three items shorter). These subjects were

however included in all other statistical analyses utilizing the subscale scores in order to increase the power of statistical inference. The rationale for this decision came from Garner and Olmsted's (1984) comment that:

Until systematic studies are made regarding the quality of scores based on incomplete data, such scores should be interpreted only with caution. It is suggested that a subscale score not be computed when more than one of the items comprising that subscale have been omitted, (p. 10).

Thus caution must be taken when interpreting Maturity Fears, since two items were omitted by some subjects. However as only one item was excluded from Perfectionism, such a precaution need not be made.

Following the guidelines set out by Nunnally (1978) and Anastasi (1961) and utilizing SPSS-X (Version 2.1), estimates of subscale reliability were calculated on 523 male and female subjects. All questionnaires used in this analysis were complete and had no missing data. Based on the average correlation among subscale items, these reliability estimates were obtained for each experimental group, all females and all males respectively, and all subjects pooled together.

Determining what constitutes an acceptable reliability level depends largely on the stage of development of that particular scale and its intended use. According to Nunnally (1978) the majority of the subscales in the present study meet at least a satisfactory standard of reliability:

In the early stages of research on predictor tests or hypothesized measures of a construct, one saves time and energy by working with instruments that have only modest reliability, for which purpose reliabilities of .70 or higher will suffice (p. 245).

Table 9 provides a listing of the results of the item analysis indicating coefficients of internal consistency for all subscales, for all experimental groupings, as well as for anorexic and a university aged female comparison group (Garner, Olmsted and Polivy, 1983). Overall, the EDI appears to be a reliable measure for all subjects ( $r=0.75$  average subscale alpha), with the exception of Maturity Fears ( $r=0.52$  average subscale alpha).

Examining the obtained reliability coefficients for each age group suggests that certain EDI subscales are more reliable for certain groups than for others. Overall, the most reliable subscale was Body Dissatisfaction (All Females:  $r=0.91$  All Males:  $r=0.86$ ). In addition, the subscale proved to be highly reliable for both sexes at all age groups (Males 11-12 (M1)  $r=0.88$ ; Males 13-14 (M2)  $r=0.86$ ; Males 15-19 (M3)  $r=0.83$ ; Females 11-12 (F1)  $r=0.88$ ; Females (F2)  $r=0.92$ ; Females (F3)  $r=0.91$ ) with most coefficients meeting or exceeding those of Garner's original samples (Anorexic (AN)  $r=0.90$  Female College comparison (FC)  $r=0.91$ ).

Drive for Thinness also demonstrated acceptable reliability for both males and females (All Females:  $r=0.81$  All Males:  $r=0.73$ ). In addition, the subscale demonstrated acceptable reliability for both sexes at all age groups (Males 11-12 (M1)  $r=0.78$ ; Males 13-14 (M2)  $r=0.69$ ; Males 15-19 (M3)  $r=0.67$ ; Females 11-12 (F1)  $r=0.74$ ; Females (F2)  $r=0.81$ ; Females (F3)  $r=0.82$ ).

Table 9 EDI Subscale Item-Total Reliabilities

Scale		AN	FC	F1	F2	F3	M1	M2	M3	All F	All M
		N=113	N=577	N=60	N=140	N=154	N=53	N=71	N=45	N=354	N=169
<b>DT</b>											
Item #	1	0.32	0.37	0.14	0.17	0.04	0.04	0.12	-0.03	0.11	0.08
	7	0.76	0.66	0.41	0.68	0.66	0.64	0.55	0.31	0.63	0.50
	11	0.58	0.63	0.47	0.56	0.64	0.45	0.19	0.15	0.58	0.32
	16	0.76	0.67	0.72	0.65	0.73	0.67	0.34	0.71	0.69	0.53
	25	0.43	0.59	0.29	0.52	0.51	0.53	0.35	0.62	0.48	0.47
	32	0.66	0.74	0.62	0.73	0.72	0.63	0.58	0.42	0.70	0.57
	49	0.70	0.66	0.62	0.66	0.75	0.56	0.64	0.62	0.69	0.60
Std Alpha*		0.85	0.85	0.74	0.81	0.82	0.78	0.69	0.67	0.81	0.73
<b>B</b>											
Item #	4	0.58	0.51	0.46	0.30	0.40	0.20	0.52	0.51	0.37	0.43
	5	0.79	0.53	0.49	0.28	0.46	0.39	0.39	0.44	0.40	0.40
	28	0.69	0.64	0.71	0.47	0.54	0.55	0.37	0.15	0.55	0.35
	38	0.74	0.60	0.58	0.54	0.35	0.39	0.44	0.34	0.46	0.39
	46	0.75	0.67	0.60	0.35	0.42	0.58	0.54	0.33	0.43	0.48
	53	0.70	0.42	0.06	0.33	0.13	0.07	0.20	**	0.20	0.06
	61	0.73	0.60	0.57	0.45	0.16	0.23	0.41	0.53	0.36	0.38
Std Alpha*		0.90	0.83	0.77	0.68	0.63	0.61	0.69	0.64	0.69	0.63
<b>BD</b>											
Item #	2	0.51	0.51	0.60	0.70	0.68	0.73	0.72	0.39	0.68	0.65
	9	0.69	0.68	0.70	0.78	0.66	0.58	0.65	0.38	0.71	0.56
	12	0.66	0.58	0.61	0.79	0.72	0.76	0.54	0.33	0.73	0.55
	19	0.50	0.65	0.69	0.67	0.61	0.69	0.52	0.72	0.65	0.63
	31	0.69	0.68	0.48	0.63	0.67	0.48	0.47	0.67	0.63	0.51
	45	0.78	0.75	0.64	0.76	0.74	0.52	0.48	0.59	0.74	0.52
	55	0.73	0.78	0.73	0.83	0.68	0.65	0.73	0.38	0.75	0.64
	59	0.83	0.73	0.67	0.63	0.72	0.51	0.54	0.59	0.68	0.53
	62	0.70	0.78	0.55	0.73	0.63	0.66	0.67	0.63	0.66	0.66
Std Alpha*		0.90	0.91	0.88	0.92	0.91	0.88	0.86	0.83	0.91	0.86
<b>I</b>											
Item #	10	0.70	0.53	0.18	0.48	0.24	0.23	0.44	0.43	0.34	0.35
	18	0.62	0.54	0.70	0.60	0.54	0.47	0.47	0.35	0.59	0.45
	20	0.65	0.59	0.60	0.40	0.53	0.46	0.47	0.25	0.47	0.41
	24	0.51	0.49	0.48	0.54	0.51	0.63	0.24	0.18	0.52	0.37
	27	0.76	0.61	0.56	0.53	0.32	0.37	0.54	0.29	0.46	0.43
	37	0.75	0.66	0.68	0.61	0.53	0.54	0.48	0.35	0.58	0.49
	41	0.74	0.63	0.68	0.54	0.53	0.67	0.23	0.09	0.56	0.39
	42	0.52	0.50	0.35	0.45	0.41	0.19	0.30	0.22	0.40	0.24
	50	0.79	0.59	0.51	0.57	0.59	0.70	0.58	0.31	0.57	0.54
	56	0.52	0.62	0.40	0.66	0.59	0.60	0.25	0.51	0.59	0.43
Std Alpha*		0.90	0.86	0.82	0.84	0.80	0.80	0.74	0.65	0.82	0.75



Table 9 EDI Cube-scale Item-Total Reliabilities

Scale		AN	FC	F1	F2	F3	M1	M2	M3	ATI F	ATI M
		N=113	N=577	N=60	N=140	N=154	N=53	N=71	N=45	N=354	N=169
<b>P</b>											
Item #	13	0.66	0.46	0.47	0.49	0.55	0.30	0.23	0.29	0.51	0.27
	29	0.43	0.39	0.38	0.23	0.28	0.32	0.28	0.37	0.27	0.31
	36	0.58	0.51	0.51	0.43	0.47	0.39	0.38	0.22	0.45	0.32
	43	0.63	0.52	0.42	0.52	0.50	0.44	0.53	0.52	0.49	0.50
	52	0.63	0.45	0.45	0.45	0.48	0.45	0.49	0.31	0.46	0.42
	63	0.58	0.41	0.46	0.37	0.31	0.17	0.34	0.50	0.35	0.32
Std Alpha*		0.82	0.73	0.72	0.67	0.71	0.62	0.64	0.63	0.70	0.62
<b>ID</b>											
Item #	15	0.76	0.58	0.49	0.59	0.51	0.46	0.36	0.63	0.54	0.46
	17	0.42	0.32	0.44	0.43	0.45	0.02	0.40	0.15	0.44	0.19
	23	0.67	0.41	0.40	0.55	0.41	0.54	0.44	0.40	0.47	0.46
	30	0.56	0.49	0.31	0.63	0.45	0.07	0.27	0.47	0.50	0.25
	34	0.60	0.53	0.54	0.46	0.60	0.40	0.54	0.57	0.53	0.50
	54	0.61	0.45	0.29	0.37	0.30	0.27	0.23	0.42	0.33	0.29
	57	0.71	0.62	0.61	0.60	0.63	0.36	0.61	0.56	0.62	0.51
Std Alpha*		0.85	0.76	0.72	0.79	0.76	0.57	0.69	0.73	0.77	0.66
<b>IA</b>											
Item #	8	0.40	0.50	0.59	0.54	0.32	0.17	0.52	0.42	0.46	0.40
	21	0.74	0.51	0.60	0.61	0.56	0.28	0.55	0.74	0.58	0.50
	26	0.63	0.19	0.08	0.27	0.36	0.40	0.45	0.33	0.28	0.41
	33	0.54	0.53	0.51	0.44	0.41	0.19	0.48	0.55	0.44	0.40
	40	0.49	0.04	0.42	0.31	0.22	0.31	0.36	0.30	0.29	0.31
	44	0.73	0.48	0.65	0.62	0.52	0.56	0.69	0.24	0.57	0.54
	47	0.22	0.06	0.09	0.32	0.34	-0.06	0.42	0.22	0.30	0.28
	51	0.56	0.23	0.62	0.55	0.54	0.13	0.51	0.62	0.55	0.43
	60	0.75	0.51	0.51	0.69	0.60	0.60	0.63	0.31	0.62	0.55
	64	0.43	0.19	0.43	0.47	0.37	0.29	0.28	0.33	0.42	0.29
Std Alpha*		0.85	0.66	0.77	0.81	0.76	0.59	0.81	0.74	0.78	0.75
<b>MF</b>											
Item #	3	0.72	0.12	0.44	0.27	0.38	0.02	-0.04	0.29	0.37	0.12
	6	0.66	0.16	0.33	0.21	0.49	-0.06	-0.13	0.52	0.33	0.13
	14	0.67	0.40	0.24	0.27	0.23	0.25	0.19	0.65	0.26	0.36
	22	0.63	0.63	0.29	0.19	0.40	-0.02	0.31	0.35	0.30	0.21
	35	0.27	0.25	0.13	0.21	0.30	0.15	-0.21	0.11	0.23	0.00
	39	0.82	0.62	0.39	0.32	0.48	0.29	0.23	0.37	0.40	0.26
	48	0.80	0.28	0.54	0.40	0.43	0.06	0.30	0.35	0.43	0.25
	58	0.72	0.42	0.24	0.42	0.40	0.01	0.41	0.57	0.38	0.34
Std Alpha*		0.88	0.65	0.63	0.58	0.70	0.21	0.26	0.71	0.65	0.45
Overall Alpha		0.87	0.78	0.76	0.76	0.76	0.63	0.67	0.70	0.77	0.68
* Standardized Item Alpha											
**Reliability coefficient not available for this cell because of zero variance.											

Several of the other EDI subscales were reliable for all but one age group. Figures 3 and 4 illustrate the results of the reliability assessment of female and male groupings respectively. In addition, the 0.70 level is highlighted on these two figures illustrating Nunnally's criterion. An examination of the items that comprise each subscale (see Appendix A), indicate that one item was usually quite unreliable, possibly reducing the overall reliability for that particular subscale. For example, Ineffectiveness demonstrated high reliability coefficients for all groups, except for Males aged 15-19 (M1  $r=0.80$ ; M2  $r=0.74$ ; M3  $r=0.65$ ; F1  $r=0.82$ ; F2  $r=0.84$ ; F3  $r=0.80$ ). Closer examination of the items in this subscale reveals that one item (#41- "I have a low opinion of myself"), proved to be a particularly unreliable item correlating 0.09 with the total subscale. Interpersonal Distrust, was reliable for all groups except for males aged 11-12 (M1  $r=0.57$ ; M2  $r=0.69$ ; M3  $r=0.73$ ; F1  $r=0.72$ ; F2  $r=0.79$ ; F3  $r=0.76$ ).

Interoceptive Awareness, also demonstrated high reliability for all groups, except for males aged 11-12 (M1  $r=0.59$ ; M2  $r=0.81$ ; M3  $r=0.74$ ; F1  $r=0.77$ ; F2  $r=0.81$ ; F3  $r=0.76$ ). The low reliability of this subscale for this group is at least partially explained by the -0.06 item-total correlation found for item #47 ("I feel bloated after eating a normal meal"). It should be noted that Garner, Olmsted and Polivy's (1983) Female Comparison group had an internal consistency reliability coefficient of only 0.66 for this particular scale. In addition, these authors reported that item #47 had an item-total correlation of only 0.06 for that same comparison group.

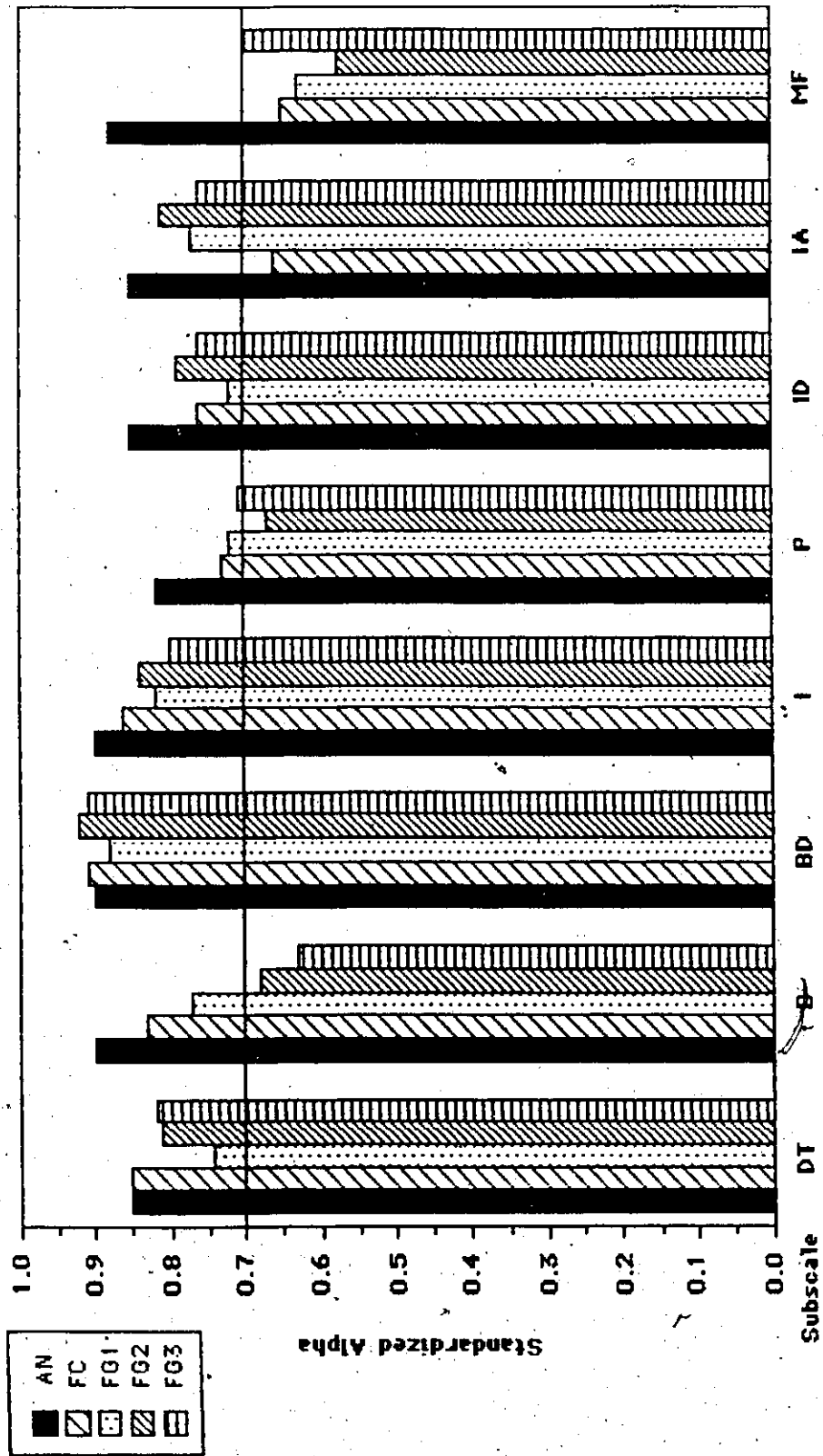


Figure 3 EDI Subscale Item-Total Reliabilities For Female Subjects

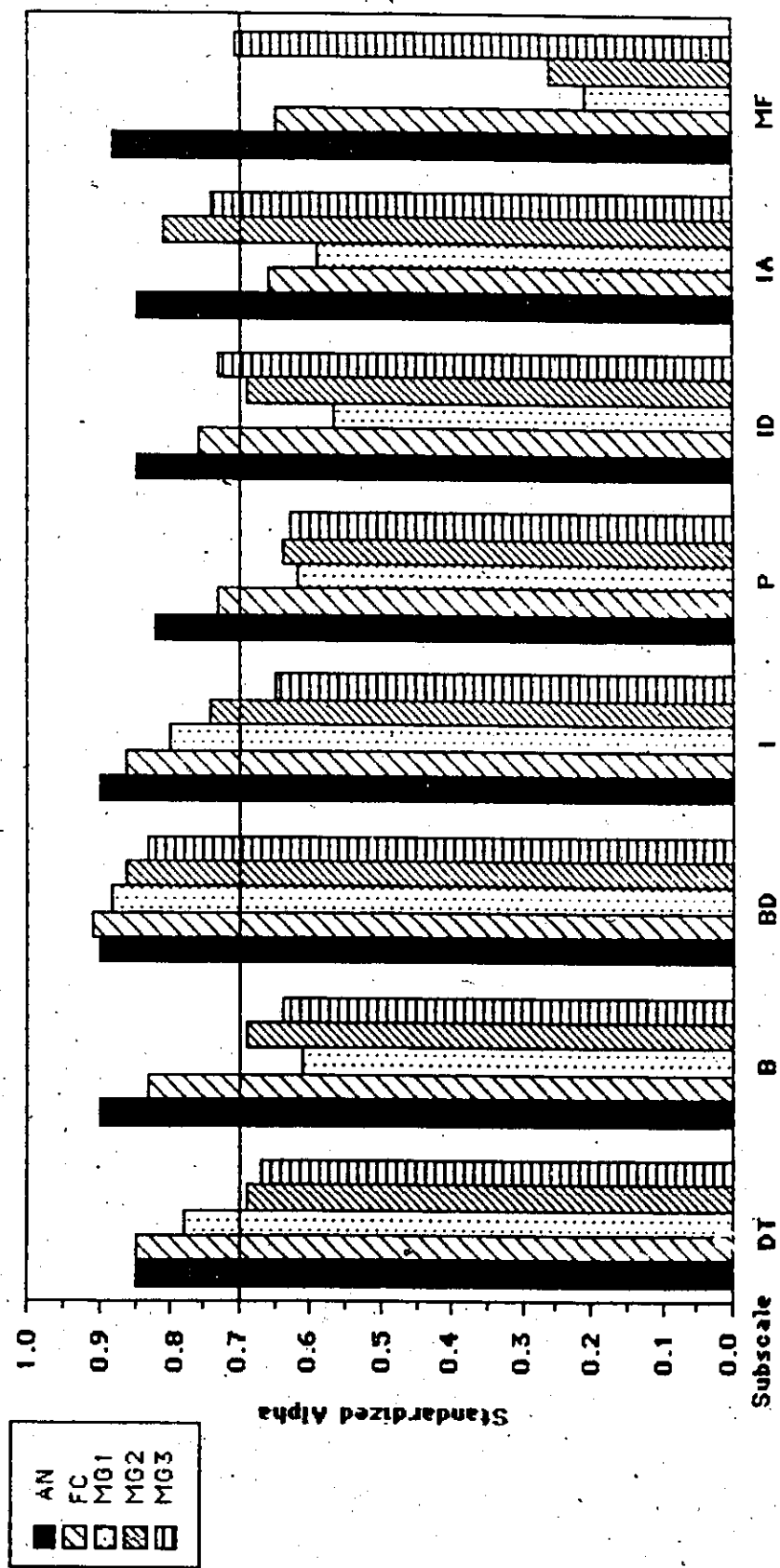


Figure 4 EDI Subscale Item-Total Reliabilities For Male Subjects

Similarly, Drive For Thinness may not have emerged as a universally reliable scale because of the low item-total correlation of one item. The subscale was reliable for all groups except for males aged 15-19 (M1  $r=0.78$ ; M2  $r=0.69$ ; M3  $r=0.67$ ; F1  $r=0.74$ ; F2  $r=0.81$ ; F3  $r=0.82$ ). Item #1-"I eat sweets and carbohydrates without feeling nervous"-had a standardized alpha of  $-0.03$ . Additionally, this item was not only unreliable for all groups in the present study, but also had a low item-total correlation for the Garner, Olmsted and Polivy (1983) Female Comparison Group ( $r=0.37$ ). Garner, Olmsted and Polivy (1983) have pointed out that items #1, #35 and #47, were maintained in the EDI even though they had low item-total correlations because they were considered conceptually important.

The remaining subscales were unreliable for more than one age group. Bulimia was reliable only for males aged 13-14 and females aged 11-12. This subscale did not meet an acceptable level of reliability for males aged 11-12 and 15-19 and females aged 13-14 and 15-19 (M1  $r=0.61$ ; M2  $r=0.69$ ; M3  $r=0.64$ ; F1  $r=0.77$ ; F2  $r=0.68$ ; F3  $r=0.63$ ). Perfectionism proved to be reliable only for females aged 11-12 and 15-19, and was not reliable for any of the male groups (M1  $r=0.62$ ; M2  $r=0.64$ ; M3  $r=0.63$ ; F1  $r=0.72$ ; F2  $r=0.67$ ; F3  $r=0.71$ ). It should be noted that the obtained reliability coefficients for F1 and F3 were similar to Garner's original female comparison ( $r=0.73$ ).

The EDI appears to be more reliable for females aged 11-19 (average subscale alpha =  $0.77$ ) than for males of the same age range (average subscale alpha =  $0.68$ ). The reliabilities for all female subjects (aged 11-19) that met or exceeded Nunnally's minimum criterion for an acceptable alpha level ( $r=0.70$ ) included, Drive For Thinness ( $r=0.81$ ), Body Dissatisfaction

( $r=0.91$ ), Ineffectiveness ( $r=0.82$ ), Perfectionism ( $r=0.70$ ), Interpersonal Distrust ( $r=0.77$ ) and Interoceptive Awareness ( $r=0.78$ ). The remaining two subscales did not meet this criterion, (Bulimia  $r=0.69$  and Maturity Fears  $r=0.65$ ).

The reliabilities for all male subjects (aged 11-19) that met or exceeded Nunnally's minimum criterion for acceptable alpha level included, Drive For Thinness ( $r=0.73$ ), Body Dissatisfaction ( $r=0.86$ ), Ineffectiveness ( $r=0.75$ ) and Interoceptive Awareness ( $r=0.75$ ). The remainder of the subscales did not meet this criterion, (Bulimia  $r=0.63$ ; Perfectionism  $r=0.62$ ; Interpersonal Distrust  $r=0.66$  and Maturity Fears  $r=0.45$ ).

Overall results support Garner and Olmsted's contention that the EDI is a reliable measure with children as young as 12 years old and perhaps 11 years old. When subjects were grouped by sex however, the EDI appeared to be a more reliable measure for females than for males. EDI subscales Body Dissatisfaction, Drive For Thinness, Ineffectiveness and Interpersonal Distrust were as reliable for females aged 11-19 as they had been for Garner's original female comparison group. Moreover, Interoceptive Awareness was more reliable for all female groups than Garner's group, while Body Dissatisfaction and Interpersonal Distrust were more reliable for females aged 13-19 than they had been for that same original comparison group. Maturity Fears was more reliable for the oldest groups males and females than it was for the original female comparison group. However, this subscale had very low reliabilities for the other age groups, especially males 11-12 and 13-14.

The fact that some of the EDI subscales possess low reliability coefficients does not necessarily indicate that those subscales have very little in common or that they can not be made more reliable. Many of the subscales had reliability coefficients that were very close to reaching Nunnally's criterion of 0.70 (i.e.  $r=0.67$  and  $0.68$ ) and should therefore not automatically be labelled unreliable for other samples.

## CHAPTER III

### RESULTS

The results of the specific predictions made on the EDI subscales Drive for Thinness and Body Dissatisfaction will be presented. The decision process by which the level of probability to be used in determining significance is also provided. Although no differences were expected or predicted on the remaining EDI subscales, the results of supplemental exploratory analyses performed on these subscales will also be presented.

#### Choice of Probability Level

Convention has dictated the use of probability levels of 0.01 or 0.05 as a criterion with which to reject or accept the null hypothesis (Kirk, 1968; Williams, 1979). The choice of probability level indicates the chance a researcher is willing to take in committing a Type I error (Kirk, 1968; McNemar 1969; Williams, 1979). A Type I error refers to the act of rejecting the null hypothesis (claiming the existence of group differences), when it should have been accepted (no group differences).

It would seem apparent that in order to minimize the possibility of committing a Type I error, a researcher should adopt a lower probability level (i.e.  $p < 0.01$ ). Although adopting a lower probability level may reduce the likelihood of performing a Type I error, it would simultaneously increase the likelihood of making a Type II error (McNemar, 1969). A Type II error involves accepting the null hypothesis when it in fact should have been rejected.



A review of recently published research has revealed that most psychological investigations have chosen a probability level of 0.05 as the level of significance that has the greatest simultaneous resistance to both Type I and Type II errors (Edwards, 1968; Williams, 1979). In addition, probability levels of 0.05 have been adopted in research similar to the present endeavor (Campbell, Porter & Moriarty, 1986; Garner, Olmsted, Polivy & Garfinkel, 1984; Porter et al., 1986). On the basis of this consensus of the relative resistance to both Type I and Type II errors, a probability level of 0.05 will be adopted as the level eligible for rejecting the null hypothesis for the purposes of the present analyses.

### Overview

Table 10 provides mean subscale scores and standard deviation data on all EDI subscales for females aged 11-12 (F1), 13-14 (F2), 15-20 (F3) and males 11-12 (M1) 13-14 (M2) and 15-19 (M3) from the present study, anorexic (AN) and female comparison (FC) subjects taken from Garner and Olmsted, (1984) and male comparison subjects (MC) taken from Garner, Olmsted and Polivy (1983).

Figure 5 illustrates mean EDI subscale profile for all of the above mentioned groups. This figure is similar to the Eating Disorder Inventory Profile Form provided with the EDI manual and is presented as an illustration of the close proximity of the respective profiles (Garfinkel & Olmsted, 1984). For the sake of clarity, Figure 6 and Figure 7 illustrate female and male group means along with Garner's male and female university comparison groups and anorexic subjects.

**Table 10**

Mean EDI Subscale Scores from Garner & Olmsted's (1984) Anorexia Nervosa (AN) and Female College Students (FC), Garner, Olmsted and Polivy's (1983) Male College Students (MC) and Present Study Male and Female Subject Mean (Standard Deviation)

	AN N=155	FC N=271	MC N=166*	F1 N=91	F2 N=169	F3 N=161	M1 N=64	M2 N=93	M3 N=41	ALL F N=424	ALL M N=206
DT	13.8(6.1)	5.1(5.5)	1.6	7.4(5.3)	6.4(5.7)	7.1(6.2)	3.2(4.0)	2.5(3.1)	1.9(2.5)	6.9(5.9)	2.7(3.5)
B	8.1(6.3)	1.7(3.1)	1	2.0(3.2)	2.0(3.0)	2.3(2.9)	1.6(2.7)	1.9(2.9)	1.4(1.9)	2.1(3.1)	1.7(2.7)
BD	15.5(7.8)	9.7(8.1)	3.9	8.4(7.4)	10.1(8.6)	12.3(8.3)	5.2(6.2)	4.0(5.1)	4.2(3.6)	10.6(8.5)	4.6(5.4)
I	12.1(8.6)	2.3(3.8)	1.6	3.6(4.6)	4.4(5.4)	4.0(4.2)	3.5(5.1)	2.7(4.3)	2.8(3.4)	4.1(4.9)	3.0(4.6)
P	8.6(5.3)	6.4(4.3)	6.2	4.7(4.0)	5.0(4.1)	4.9(4.1)	5.1(3.6)	5.8(4.0)	5.6(4.2)	4.9(4.0)	5.5(3.9)
ID	6.4(4.9)	2.4(3.0)	3.1	5.1(5.2)	4.1(5.4)	3.2(5.1)	4.4(3.8)	4.2(4.9)	4.7(3.1)	4.0(3.7)	4.3(3.7)
IA	11.4(7.0)	2.3(3.6)	1.4	5.2(3.5)	5.3(4.0)	5.2(3.2)	3.6(3.4)	3.6(3.6)	3.5(4.2)	5.3(5.4)	3.7(4.2)
MF	5.6(5.8)	2.2(2.5)	2.7	4.4(3.6)	3.9(2.9)	3.8(3.2)	3.9(2.6)	3.6(3.0)	4.6(3.7)	4.0(3.4)	3.9(3.1)
Age:	22.5(5.4)	20.3(1.6)	20.3	11.8(0.4)	13.5(0.5)	15.9(1.1)	11.8(0.4)	13.3(0.4)	16.4(1.0)	14.1(1.8)	13.5(1.8)

\* Standard Deviation was not provided for these data

AN= Anorexic subjects' scores taken from Garner and Olmsted (1984)  
 FC=Female comparison group. Subjects' scores taken from Garner and Olmsted (1984)  
 MC=Male comparison group. Subjects' scores taken from Garner, Olmsted and Polivy (1983)  
 M1=Males 11-12  
 M2=Males 13-14  
 M3=males 15-19  
 F1=Females 11-12  
 F2=Females 13-14  
 F3=Females 15-19

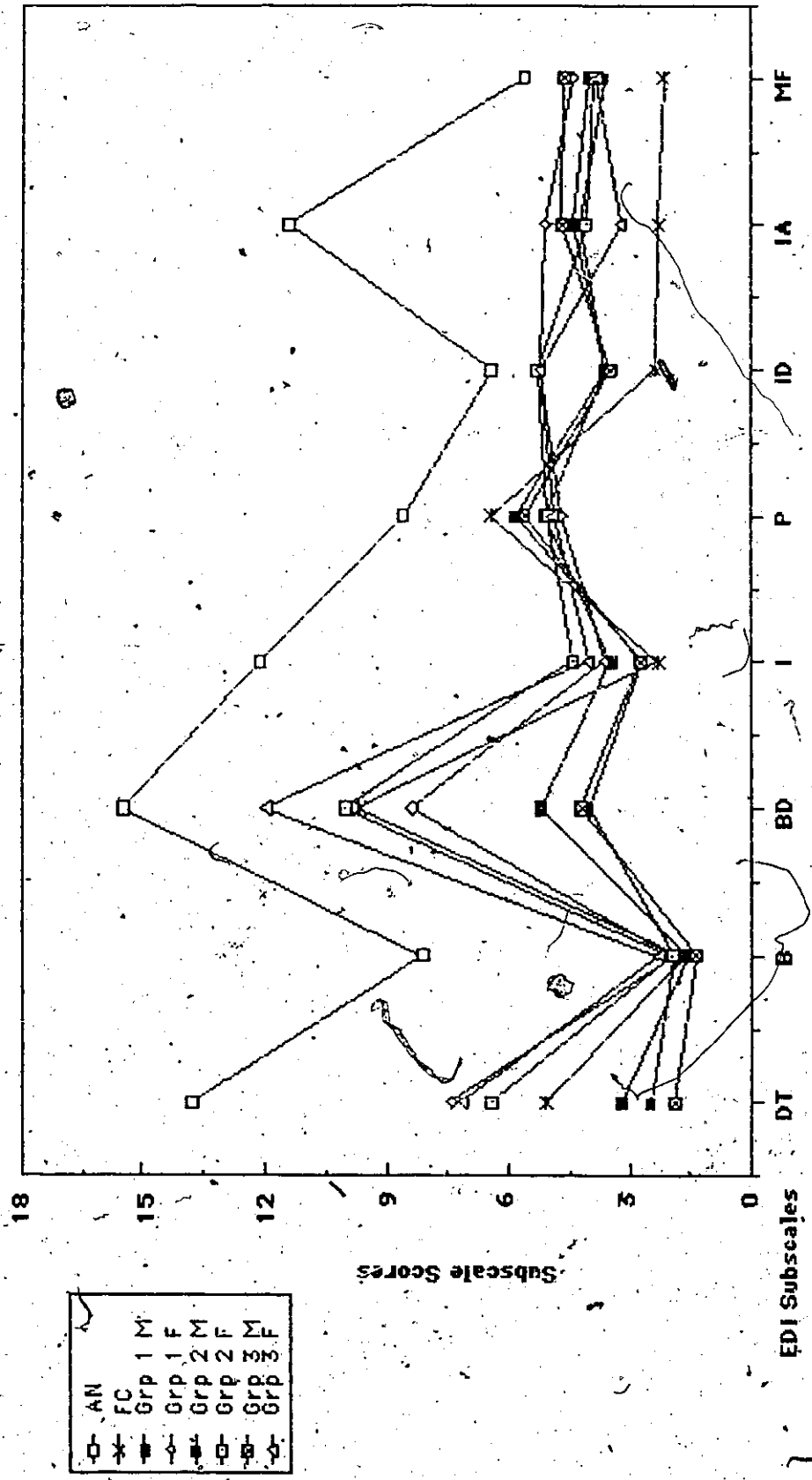


Figure 5. Female and Male group means comparison with Garner's Female Anorexic and Female Comparison Group

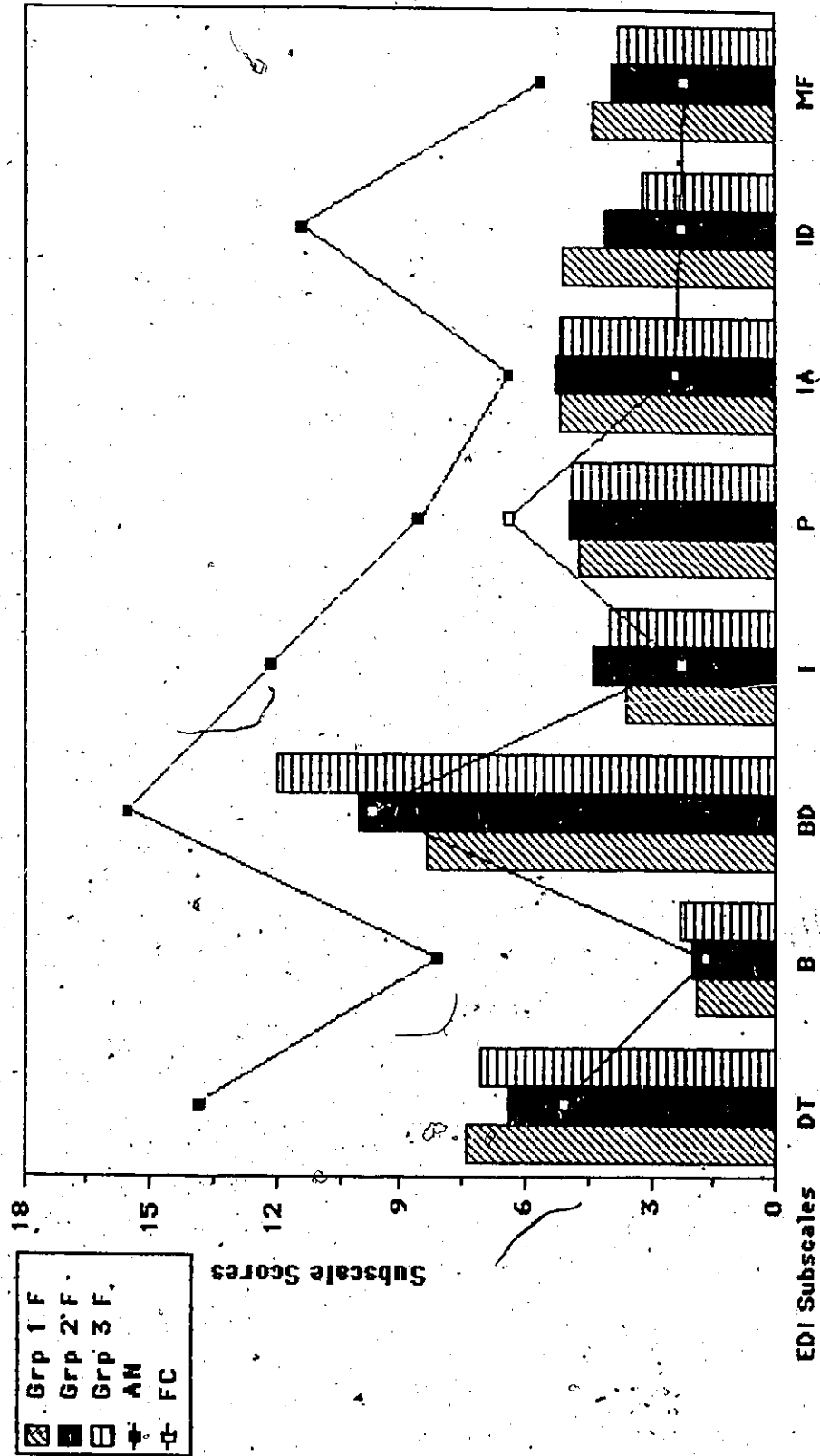


Figure 6. Female group means comparison with Garner's Female Anorexic and Female Comparison Group

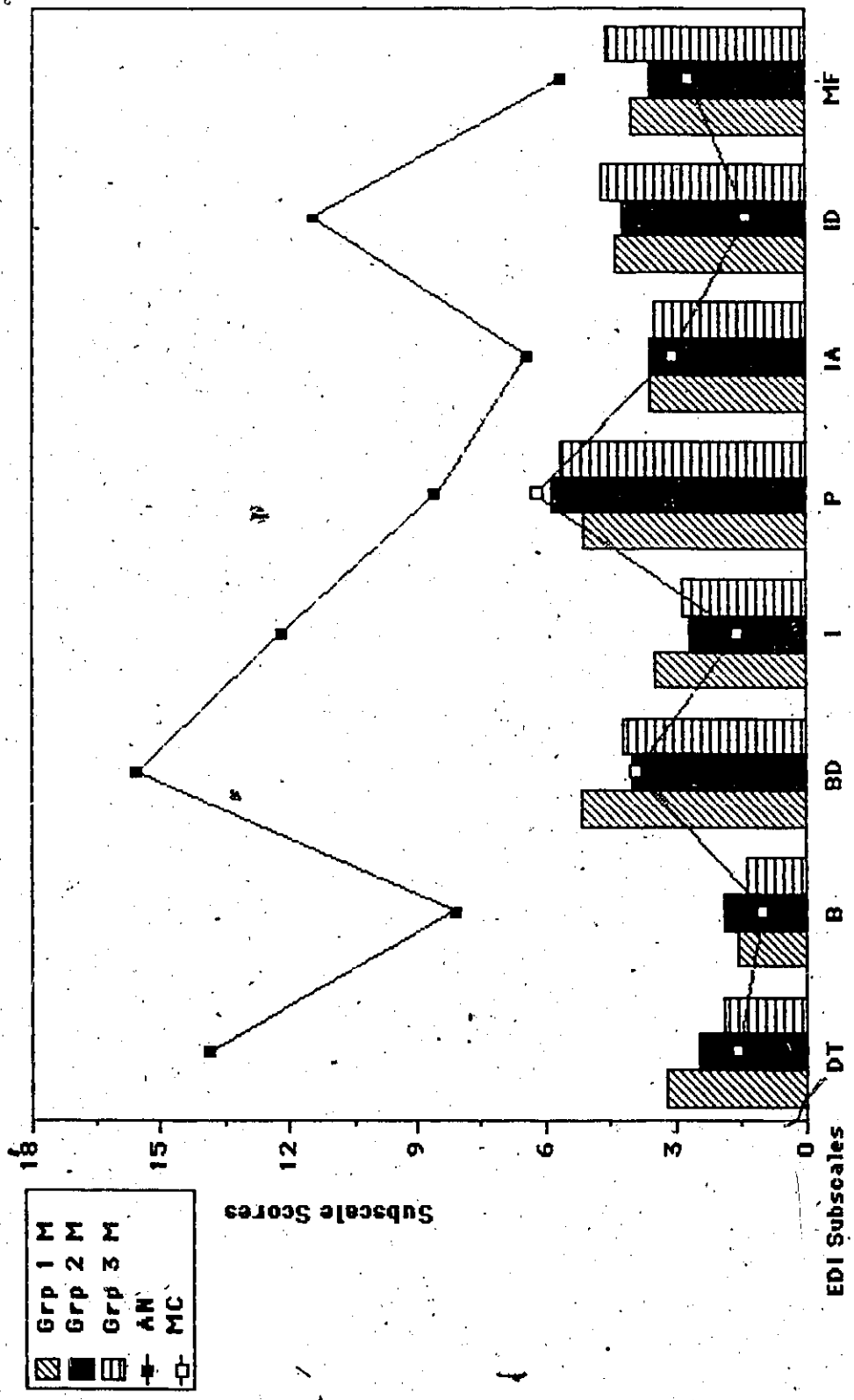


Figure 7. Male group means comparison with Garner's Female Anorexic and Male Comparison group

### Age and Sex Differences in Eating Attitudes and Behaviour

Two way multivariate analysis of variance (MANOVA) indicated an overall significant age group effect on the combination of EDI subscales Drive for Thinness and Body Dissatisfaction (Wilks' Lambda= 0.978;  $F_{(4, 1224)}=3.42$ ,  $p<0.0086$ ). In addition, an overall sex effect was uncovered (Wilks' Lambda= 0.861;  $F_{(2, 612)}=49.32$ ,  $p<0.0001$ ), as well as an overall interaction effect between age groups and sex on Drive for Thinness and Body Dissatisfaction (Wilks' Lambda= 0.982;  $F_{(4, 1224)}=2.73$ ,  $p<0.028$ ).

Table 11 presents the results of subsequent univariate analysis of variance (ANOVA) performed on Drive for Thinness and Body Dissatisfaction. A significant sex effect was revealed on both Drive For Thinness ( $F_{(1, 618)}=87.33$ ,  $p<0.0001$ ) and Body Dissatisfaction, ( $F_{(1, 618)}=73.36$ ,  $p<0.0001$ ). This suggests that females between the ages of 11 to 19 score consistently higher than males on these subscales.

As predicted a Group\*Sex interaction was uncovered for Body Dissatisfaction ( $F_{(2, 618)}= 3.84$ ,  $p<0.05$ ). Figure 8 illustrates this interaction. The expected Group\*Sex interaction was not found for Drive For Thinness ( $F_{(2, 618)}=0.76$ ,  $p=0.47$ ). Interpretation of the interaction on Body Dissatisfaction, was facilitated through the Newman-Keuls pair-wise comparisons (Williams, 1979). Utilizing the procedures set out by Kirk (1968), post-hoc analysis revealed significant differences between all groups, save M1 and M3 and M2 and M3. Although this interaction was predicted, the results of the Newman-Keuls did not confirm the expectation that no significant differences would be uncovered between M1 and F1 (prepubertal).

The remaining results indicate that with the onset of puberty in females, body dissatisfaction increased with age. Prepubertal males (11-12) scored higher on Body Dissatisfaction than did pubertal males (13-14), while males 15 to 19 did not score significantly higher than any other males.

Table 12 illustrates these latter results.

**Table 11. Univariate Analysis of Variance of Drive for Thinness and Body Dissatisfaction for Sex and Age Group**

SUBSCALE: DRIVE FOR THINNESS

<u>SOURCE</u>	<u>DF</u>	<u>SS•</u>	<u>F VALUE</u>	<u>P VALUE</u>
GROUP	2	79.1	1.47	0.231
SEX	1	2355.4	87.33	0.0001**
GRP*SEX	2	41.1	0.76	0.4667

SUBSCALE: BODY DISSATISFACTION

<u>SOURCE</u>	<u>DF</u>	<u>SS•</u>	<u>F VALUE</u>	<u>P VALUE</u>
GROUP	2	182.2	1.61	0.2
SEX	1	4146.2	73.36	0.0001**
GROUP*SEX	2	433.9	3.84	0.022*

SS•= Partial sums of squares (Type III, (SAS Users Guide, 1985))

\*p<.05

\*\*p<.001



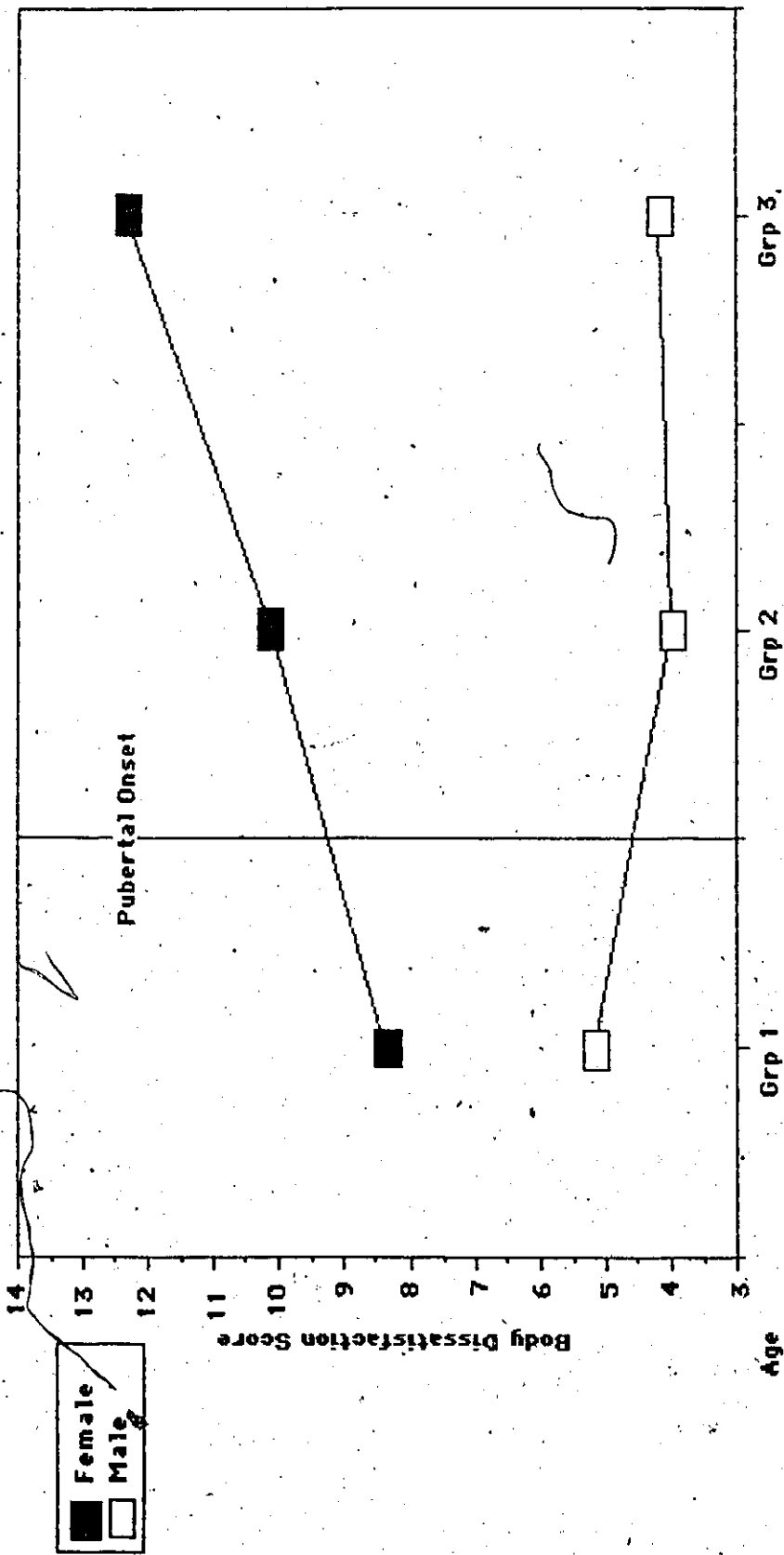


Figure 8. Group by Sex Interaction on Body Dissatisfaction

Table 12. Post-Hoc Analysis of Grp\*Sex Interaction on Body Dissatisfaction Subscale

	<u>M2</u>	<u>M3</u>	<u>F1</u>	<u>F2</u>	<u>F3</u>
<u>M1</u>	*	NS	**	**	**
<u>M2</u>		NS	**	**	**
<u>M3</u>			**	**	**
<u>F1</u>				**	**
<u>F2</u>					**

\*p<.05

\*\*p<.01

### Additional Analyses

No differences were expected on the remaining six EDI subscales measuring the more fundamental aspects of the psychopathology characteristic of anorexia nervosa. However, a two way multivariate analysis of variance (MANOVA) indicated an overall significant sex effect on the combination of EDI subscales Bulimia, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness and Maturity Fears, (Wilks' Lambda= 0.959;  $F_{(6, 608)}=4.38$ ,  $p<0.0002$ ). MANOVA analyses did not suggest an overall age (Wilks' Lambda= 0.989;  $F_{(12, 1216)}=0.72$ ,  $p>0.733$ ) or interaction effect (Wilks' Lambda= 0.972;  $F_{(12, 1216)}=1.43$ ,  $p>0.144$ ) on these subscales.

In order to determine which EDI subscales contributed to the significant sex effect uncovered by the MANOVA, subsequent univariate analyses were performed. Table 13 presents the results of subsequent univariate analysis of variance (ANOVA) performed on Bulimia, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness and Maturity Fears. A significant main effect for sex on Ineffectiveness, ( $F_{(1, 618)}=5.45$ ,  $p<0.02$ ) and Interoceptive Awareness, ( $F_{(1, 618)}=13.1$ ,  $p<0.0003$ ) was revealed.

**Table 13. Univariate Analysis of Variance of Bulimia, Ineffectiveness, Perfectionism, Interpersonal Distrust, Interoceptive Awareness and Maturity Fears Scores for Sex and Age Group**

SUBSCALE: BULIMIA

<u>SOURCE</u>	<u>DF</u>	<u>SS•</u>	<u>F VALUE</u>	<u>P VALUE</u>
GROUP	2	4.1	0.23	0.797
SEX	1	24.2	2.7	0.101
GROUP*SEX	2	13.3	0.74	0.477

SUBSCALE: INEFFECTIVENESS

<u>SOURCE</u>	<u>DF</u>	<u>SS•</u>	<u>F VALUE</u>	<u>P VALUE</u>
GROUP	2	3.0	0.07	0.937
SEX	1	126.2	5.45	0.02*
GROUP*SEX	2	55.8	1.2	0.301

SUBSCALE: PERFECTIONISM

<u>SOURCE</u>	<u>DF</u>	<u>SS•</u>	<u>F VALUE</u>	<u>P VALUE</u>
GROUP	2	21.4	0.67	0.5136
SEX	1	46.1	2.87	0.0907
GROUP*SEX	2	6.2	0.19	0.8239

SUBSCALE: INTERPERSONAL DISTRUST

<u>SOURCE</u>	<u>DF</u>	<u>SS•</u>	<u>F VALUE</u>	<u>P VALUE</u>
GROUP	2	53.3	1.97	0.141
SEX	1	10.0	0.73	0.392
GROUP*SEX	2	80.5	2.97	0.0521

SUBSCALE: INTEROCEPTIVE AWARENESS

<u>SOURCE</u>	<u>DF</u>	<u>SS•</u>	<u>F VALUE</u>	<u>P VALUE</u>
GROUP	2	0.7	0.01	0.986
SEX	1	327.3	13.1	0.0003**
GROUP*SEX	2	0.1	0.0	0.9988

SUBSCALE: MATURITY FEARS

<u>SOURCE</u>	<u>DF</u>	<u>SS•</u>	<u>F VALUE</u>	<u>P VALUE</u>
GROUP	2	22.7	1.12	0.328
SEX	1	0.0	0.0	0.9504
GROUP*SEX	2	34.5	1.7	0.1836

SS• = Partial sums of squares (Type III, (SAS Users Guide, 1985))

\*p<.05

\*\*p<.001

## CHAPTER IV

### DISCUSSION

#### Overview of Findings

The label of anorexia nervosa has become almost exclusively associated with young females (Garfinkel & Garner, 1982; Leichner, Arnett, Rallo, Srikameswaran & Vulcano, 1986; Vandereycken & Meermann, 1984). It has been widely assumed that male anorexia existed in negligible numbers, if indeed its existence was even acknowledged (Beumont, Beardwood, & Russell, 1972).

The general belief that males and females of all ages differ with respect to all attitudes and behaviours associated with eating was evaluated. It was hypothesized that for a normative sample of elementary and high school students, sex by age differences would be found only for postpubertal females on EDI subscales measuring the drive for thinness (DT) and body dissatisfaction (BD). The EDI was designed specifically to measure the attitudes and behaviours relevant to anorexia nervosa, the EDI was administered in order to assess what, if any, differences exist between young males and females in a nonclinical sample on these two subscales. By first determining by the EDI's internal consistency, it was discovered that the scale is a psychometrically valid instrument for this population.

It is important to note however that while the EDI as a whole proved to be a reliable measure for this age group, the subscale Maturity Fears had low reliability. This was probably due to the irrelevancy of questions relating to

pubertal experiences in prepubescent subjects. Future research must attempt to determine the effects of deleting this subscale on the psychometric properties of the EDI.

### Pubertal and Sociocultural Positions

According to Crisp (1983) and Garfinkel and Garner (1982), the onset of puberty and its accompanying weight gain become a threatening state for females, who are strongly directed by sociocultural pressures to become and remain perpetually thin. The media provides a clear message to young women, but not necessarily to young men, that to be worthy is to achieve and maintain thinness--at all costs. Although males are also gaining weight with the onset of puberty (albeit in different places), they are not driven by the same sociocultural pressures to be thin as are females and as such the consequences of the gain do not convey the same outcome.

Not only are young females driven by their culture toward thinness, they also face the conflictual emotional and biological pressures of trying to maintain a low weight in the face of ever increasing pubertal weight gain. These pressures have been assumed to play a large role in the overrepresentation of females rather than males as victims of anorexia nervosa (Frankenburg et al. 1982).

It is widely agreed in the literature that many young women who develop feelings of inefficacy are subsequently driven by and susceptible to sociocultural influences, which in turn lead to dieting and preoccupation with body image as a means to achieve a sense of control over their world (Bruch, 1982; Garfinkel, 1981; Garfinkel & Garner, 1983; Garner & Garfinkel, 1980; Garner, Garfinkel & Olmsted, 1983; Katz, 1985; Selvini-Palazzoli, 1974).

Based on Crisp's (1983) "pubertal viewpoint", it was hypothesized that with the onset of puberty, females would be more likely than males to experience a sensitivity to the prevailing sociocultural pressures directing them toward a relentless pursuit of thinness and preoccupation with their bodies. The only significant difference discovered between prepubescent and pubescent females was on the subscale measuring body dissatisfaction.

Supportive of the sociocultural position, females at each age group scored higher than all male groups on Body Dissatisfaction. Additional support for this view is provided by the fact that even prepubertal females scored higher than pubertal males on this scale. Thus even at this young age, differential messages are being conveyed to males and females about the shapes of their bodies. Consistent with the pubertal viewpoint, the bodily changes in young females triggered by puberty lead (with age and physiological development) to a body shape that is more discrepant with the sociocultural "ideal". Therefore, as girls advance through puberty, they become increasingly dissatisfied with their bodies.

Prepubertal males experienced a greater displeasure with the shape of their bodies than did males in the early stages of puberty, but not than those well into puberty. These results also provide support for the sociocultural position which would predict that with the onset of puberty males would value their bodies to a greater degree. With the onset of puberty in males, many of the physical attributes that are prized by our culture emerge. For example, males now evidence facial hair, muscle tone and deeper voices. While this may be a time of discontent for females, it is a rather happy time for males.



It was discovered that females aged 11 to 19 consistently scored higher than males of the same ages on items suggestive of having a greater concern with dieting, body image dissatisfaction, preoccupation with weight and "entrenchment in an extreme pursuit of thinness"--the cardinal symptom of anorexia nervosa (Bruch, 1971; Garner et al. 1983, p.17; Leichner, 1985).

It was hypothesized that sex differences would only begin to emerge on the subscales of drive for thinness and body dissatisfaction at the pubertal ages of 13 and 14 and that no such differences would exist at the prepubertal ages of 11 and 12. Results indicated that females as young as 11 to 12 manifested, to the same degree as those in older age groups, attitudes and behaviours common to anorexia nervosa. This may be denotative that the drive for thinness and body dissatisfaction (as well as puberty itself) may begin at a younger age than was originally expected. As predicted, at a pubertal age, females scored significantly higher than males on both subscales measuring attitudes and behaviours indicative of a drive for thinness and body dissatisfaction.

The finding that females in all age groups scored significantly higher than males on Drive for Thinness suggests that sociocultural pressures for thinness in females begin to exert their effects before the onset of puberty. The implication of this result is that as early as 11 or 12 years of age, young females have already been inculcated with society's values. The absence of an age by sex interaction on Drive for Thinness indicates that the relentless pursuit of thinness does not increase after age 11 or 12.

A second significant finding was that even before the physiological

changes of puberty manifested themselves, females were more dissatisfied with their body shape than were comparably aged males. This suggests that body dissatisfaction in females is influenced both by the sociocultural factors which define ideal body shape and by actual body shape (which may contrast with the ideal).

The above mentioned results provide strong support for the sociocultural interpretation as to the origins and maintenance of anorexia nervosa. Societal propaganda levels are set and absorbed by females by the time they reach puberty. Furthermore, as has been consistently reported in the literature, support was provided for the contention that sociocultural pressures toward thinness primarily affect females, even prior to puberty.

### **Supplemental Findings**

Although the entire EDI was administered to the subjects in the present study, predictions were only made with respect to Drive for Thinness and Body Dissatisfaction. However, since data for the other subscales were available, an exploratory investigation was performed.

No relationship was uncovered for either sex or age on a measure of bulimic attitudes and behaviours. This suggests that the attitudes and behaviours related to bulimia do not vary in their severity for either males or females in the 11 to 19 age group or that they are not present until a later time. This finding supports Neuman and Halvorson's (1983) contention that bulimic behaviour typically has a later age of onset than the age of the subjects in the present study.

Contrary to original expectations, males and females ranging in age from 11 to 19 significantly differed on two of the five subscales measuring

of the more fundamental psychopathology which is believed to play an integral role in the development and maintenance of anorexia nervosa. These subscales included Interceptive Awareness and Ineffectiveness which established females as higher scorers than males.

Interceptive Awareness measures the extent to which an individual lacks confidence in the ability to perceive and label emotions and feelings of hunger (Garner et al., 1983; Garner, Olmsted & Polivy, 1984). Although Interceptive Awareness is considered by Garner to be one of the EDI subscales measuring "fundamental aspects of the psychopathology of anorexia nervosa", it is the only subscale in this category that contains items related to eating behaviour. Therefore, it would not be unreasonable to also consider Interceptive Awareness one of the subscales assessing eating related attitudes and behaviours.

Including Interceptive Awareness as a diet related subscale would indicate that the data presented here provide additional support for the contention that due to certain factors (sociocultural and/or pubertal), females are more susceptible to those attitudes and behaviours indicative of preoccupation with food-related topics and body functioning than are males, who develop other symptomology (Bruch, 1978; Crisp, 1983; Garfinkel, 1981; Garfinkel & Garner, 1983; Garner & Garfinkel, 1980; Katz, 1985; Selvin-Palazzoli, 1974; Vandereycken & Meermann, 1984).

The "positive" effect of puberty for males (development of desirable physical attributes) would account for these significantly lower feelings of ineffectiveness noted for males. With the onset of puberty and its accompanying growth in the body, many young females come to feel a lack of control over their bodies and their environments, while males, on the

whole, feel more in control with new found strength and "manly" appearance.

Several authors have postulated that pervasive feelings of ineffectiveness in young females is a major contributor to the development of anorexia nervosa. According to this view, certain young women develop feelings of ineffectiveness about their ability to control their lives. They may seek various means to master these feelings. Eventually individuals undertake severe discipline over their bodies as an attempt to stave off these feelings of powerlessness, and anorexia nervosa becomes the syndrome by which this control is maintained (Bruch 1971, 1977, 1982; Garner, Olmsted, & Polivy, 1983b).

In summation, results indicate that only certain beliefs and behaviours indicative of a predisposition toward developing anorexia nervosa are more common in females than males. Only four (Drive For Thinness, Body Dissatisfaction, Ineffectiveness and Interoceptive Awareness) out of the eight subscales comprising the EDI were found to be significantly higher for females. This latter result also provides support for the hypothesis that the predominance of female over male anorexia nervosa reported in the literature is not an indication of overall greater psychological disturbance in young females, but rather a greater sensitivity to stimuli related to their body shape (dieting, body shape and feelings of hunger).

Finally, data provided from Ineffectiveness and Interoceptive Awareness suggest that factors beyond pubertal influences and pressures for maintaining thinness differentiate males and females. In addition, the lack of an age by sex interaction on Drive for Thinness, Ineffectiveness and Interoceptive Awareness, suggests that females are more prone than are

males to manifest a relentless pursuit of thinness, exhibit greater feelings of helplessness and experience an inability to accurately label their affective states. Furthermore, this greater sensitivity exhibited by females over males toward adoption of the traits and behaviours associated with these particular subscales does not dissipate over the years.

### **Implications and Limitations of the Present Study**

Overall both the sociocultural and pubertal positions were supported by the results. Conclusions drawn in this project as to the veracity of the pubertal and sociocultural positions were made based on trends evident on only two of eight EDI subscales. It was assumed that these subscales were sensitive to capture effects of these factors. For example, it was assumed that the significant increase in Body Dissatisfaction in females provided support for the pubertal position in females, while the lack of a significant age by sex interaction in Drive For Thinness contributed to suspicion about that particular viewpoint.

The conclusions drawn about the pubertal and sociocultural positions were predicated on the relationship between subscale scores and age. It was assumed that these influences are the most salient faced by young males and females. Although previous research has documented the salience of the pubertal (Crisp, 1983) and sociocultural (Garfinkel & Garner, 1982) influences during these years, the possibility of alternative explanations (i.e. physiologically based) accounting for these relationships must be considered (Katz, 1985).

In assessing the "pubertal" position, certain assumptions were made. It was assumed that puberty would first manifest its effects between the ages

of 13 and 14 and that no meaningful effects would exist at ages 11 to 12. For the purposes of the present study it was assumed that the onset of puberty occurred for both males and females within the same age grouping of 13-14. This receives partial support from both the the American Medical Association (AMA) which states that pubertal onset for males is "after age 12 or 13" (American Medical Association, 1982 p. 706) as well as Condon and Smith (1980) who suggest that puberty begins for females at "about 13 or 14" (p. 339). However, the AMA suggests that the changes associated with puberty begin at a younger age for females--after age 11. It is quite possible that the effect of puberty is quite salient in the development of anorexia nervosa, but was not tapped by the present study because it may have an earlier age of onset than was anticipated.

In other words, the hypothesized effect of the pubertal time period may have been detected if younger age groups had also been included. It is possible that females assumed to be prepubescent were actually in the throes of puberty. Although a comparison of males and females aged 13 to 14 may have been comparing pubescent boys to pubescent girls, such a comparison between children aged 11 and 12 years old, may have actually been assessing pubescent girls with prepubescent boys. Future research must certainly include younger samples of females if the differential effects of puberty are to be gauged.

Sociocultural factors are so ubiquitous, that it would be impossible to determine which EDI subscales would be more prone to these influences. However, bearing in mind the differential sociocultural messages to each sex, it was possible to predict that those subscales measuring attitudes towards dieting and body shape would be significantly higher in females than males.

The present study provides support and extends the study reported by Porter et al. (1986). These authors found a significantly higher Drive For Thinness (but not Interpersonal Distrust and Perfectionism) scores for females than males in a population with an average age 11.88 years (average age was 13.9 years in the present study). Unfortunately, the remaining EDI subscales were not used, therefore additional comparisons cannot be made.

Although a large amount of data was compiled on each subject in the present study, certain essential data were not collected. For example, it would have been quite desirable to ascertain each subject's weight. Leichner et al. (1986) found that high scores on the EAT for a similar young population were not the sole province of underweight females, but were more prevalent in the overweight females. However, subject weight in this study was collected through self-report and not determined objectively, and would likely be prone to bias and denial (Vandereycken & Meermann, 1984).

An assessment of socioeconomic status (SES) would also have been of interest. Muni-Brander and Lachenmeyer's investigation of a male high school normative sample (1986) found no significant differences between low SES and high SES males as measured by the EAT cutoff for restricting anorexia nervosa. In addition, no significant differences were revealed between low SES and high SES males as measured by the DSM III criteria for bulimia. It is interesting to note however that as many as 6.3% of low SES males and 3.0% of high SES males met the EAT criteria for restricting anorexia nervosa.

On the other hand Leichner et al. (1986) investigated both male and

female elementary and high school students and found that age, SES and EAT scores were positively correlated. Consistent with current literature, Leichner et al. concluded that within the upper social classes, the cultural preferences with the emphasis on physical appearance and scholastic competition led to higher EAT scores. The apparent discrepancy between the Leichner et al. and the Muni-Brander and Lachenmeyer study may be attributed to both the significantly larger sample and to the more heterogeneous sample found in the former study. That is, Leichner et al. also incorporated a middle SES group thereby allowing for more a robust statistical analysis.

Very little research has been conducted using the EDI. Most research in the area of anorexia nervosa has utilized the Eating Attitudes Test, also designed by Garner. As was discussed in the introductory remarks, the EAT and the EDI assess different aspects of anorexia nervosa and one should not consider the EDI as a replacement of the EAT (Garner & Olmsted, 1984). While Garner and Olmsted (1984) provide some guidelines as to how to interpret who might be at risk to develop anorexia nervosa, one definite advantage that the EAT has over the EDI is its statistically based cutoff points. That is, any subject scoring at or above a score of 30 can be reliably identified as at risk for being anorexic.

At this time there is no such cutoff point for the EDI. The only manner by which one can determine if a particular subject currently manifests or is at risk to develop anorexia nervosa, is by plotting the subject's eight subscale scores on a profile form (see Figure 4) and comparing them to a sample of diagnosed anorexics. There are several difficulties with this method of assessment. There is no means by which an overall score of distress can be



determined. Summing the subscales of the EDI has no documented significance. Thus the clinician and/or researcher is left to interpret each subscale in isolation. Future research should be geared toward determining cutoff points, the significance of an overall global score and the clinical significance of various profiles.

Garner and Olmsted comment that "scores falling in the shaded ranges (on the EDI profile form) are not significantly different at  $p = .01$  from the respective normative sample means" (p. 11). It is not possible at this point in the history of the EDI to discern the salience of the various subscales for various groups. How many EDI subscales does a subject have to be within the "anorexic range" of the profile form before they are at "risk"?

Two recent studies utilizing the EDI adopted two different methods for assessing those in the anorexic range. In order for a subject to be considered in the anorexic range in Campbell, Porter and Moriarty's (1986) report, "EDI profile had to have more subscale scores comparable to the anorexic profile than to the normative female high school profile" (p. 41). Porter et al. (1986) utilized Garner and Olmsted's percentile rankings as a means of comparison. Unfortunately, appropriate norms were not available for the young age of their sample and they had to use the most appropriate available--the closest age group.

Future research must include a reconsideration of the present norms that are used in the interpretation of the EDI especially for males. An examination of Figure 6 and Figure 7 illustrate that mean scores compiled in the present study (for both males and females) are higher than the college norms. If the EDI is to be used accurately for clinical and/or research purposes with subjects this young in the future, the need for more

appropriate norms for adolescents is apparent.

For example, for every subscale with the exception of Perfectionism, male subject means exceeded the means of the male university comparison group. This point is even more evident with Body Dissatisfaction. That is, the age differences found for females on this subscale indicates the need for age and sex specific norms for adolescent females.

The present study utilized a nonclinical sample to establish the differences between young males and females with respect to attitudes and behaviours suggestive of anorexia nervosa. Thus the question of what constitutes male or female anorexia nervosa was not addressed. Future research should address the differences and similarities between males and females afflicted with this disorder.

An extrapolation of the present data suggests that males and females do not differ in the extent of their overall psychological "health", but only in the nature of their target symptoms. If anorexia nervosa is a female response to sociocultural and pubertal factors, while males develop other disorders, what does this say about males who develop anorexia nervosa? Do such males manifest the same drive for thinness characteristic of female anorexia nervosa? It was not within the scope of this study to answer this question, since a normative sample was used. To satisfy such a question would require a replication of this study with a sample of male and female anorexics.

## Appendix

### Individual Items From the Eating Disorder Inventory Listed By Subscale

#### Drive For Thinness

- 1.\* I eat sweets and carbohydrates without feeling nervous.
  7. I think about dieting
  11. I feel extremely guilty after overeating.
  16. I am terrified of gaining weight.
  25. I exaggerate or magnify the importance of weight.
  32. I am preoccupied with the desire to be thinner.
  49. If I gain a pound, I worry that I will keep gaining.
- 

#### Bulimia

4. I eat when I am upset.
5. I stuff myself with food.
28. I have gone on eating binges where I have felt that I could not stop.
38. I think about bingeing (overeating).
46. I eat moderately in front of others and stuff myself when they're gone
53. I have the thought of trying to vomit in order to lose weight.
61. I eat or drink in secrecy.

**Body Dissatisfaction**

- 2. I think that my stomach is too big.
  - 9. I think that my thighs are too large.
  - 12.\* I think that my stomach is just the right size.
  - 19.\* I feel satisfied with the shape of my body.
  - 31.\* I like the shape of my buttocks.
  - 45. I think that my hips are too big.
  - 55.\* I think that my thighs are just the right size.
  - 59. I think my buttocks are too large.
  - 62.\* I think that my hips are just the right size
- 

**Ineffectiveness**

- 10. I feel ineffective as a person.
- 18. I feel alone in the world.
- 20.\* I feel generally in control of things in my life.
- 24. I wish I were someone else.
- 27. I feel inadequate.
- 37.\* I feel secure about myself.
- 41. I have a low opinion of myself.
- 42.\* I feel that I can achieve my standards.
- 50.\* I feel that I am a worthwhile person.
- 56. I feel empty inside (emotionally).

**Perfectionism**

- 13. Only outstanding performance is good enough in my family.
  - 29. As a child, I tried very hard to avoid disappointing my parents and teachers.
  - 36. I hate being the best at things.
  - 43. My parents have expected excellence of me.
  - 52. I feel that I must do things perfectly or not do them at all.
  - 63. I have extremely high goals.
- 

**Interpersonal Distrust**

- 15.\* I am open about my feelings.
  - 17.\* I trust others.
  - 23.\* I can communicate with others easily.
  - 30.\* I have close relationships.
  - 34. I have trouble expressing my emotions to others
  - 54. I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close).
  - 457.\* I can talk about personal thoughts or feelings.
-

**Interoceptive Awareness**

8. I get frightened when my feelings are too strong.
21. I get confused about what emotion I am feeling.
- 26\* I can clearly identify what emotion I am feeling.
33. I don't know what's going on inside me.
40. I get confused as to whether or not I am hungry.
44. I worry that my feelings will get out of control.
47. I feel bloated after eating a small meal.
51. When I am upset, I don't know if I am sad, frightened or angry.
60. I have feelings I can't quite identify.
64. When I am upset, I worry that I will start eating.
- 

**Maturity Fears**

3. I wish that I could return to the security of childhood.
6. I wish that I could be younger.
14. The happiest time in life is when you are a child.
- 22\* I would rather be an adult than a child.
35. The demands of adulthood are too great.
- 39\* I feel happy that I am not a child anymore.
48. I feel that people are happiest when they are children.
- 58\* The best years of your life are when you become an adult.
- 

\*indicates negatively keyed item

## REFERENCES

- Abraham, S., & Beumont, P. (1982). How patients describe bulimia and binge eating. Psychological Medicine, 12, 623-635.
- Altshuler, K., & Weiner, M. (1985). Anorexia nervosa and depression. A dissenting view. American Journal of Psychiatry, 142(3), 328-331.
- American Medical Association: The American Medical Association Family medical guide. (1982). New York: Random House.
- American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Third Edition. (1980). Washington, D.C.: APA.
- Anastasi, A. (1962). Psychological testing (2nd ed.) New York: The Macmillan Company.
- Andersen, A. (1985). Practical comprehensive treatment of anorexia nervosa and bulimia. Maryland: Johns Hopkins.
- Askevold, F. (1983). The diagnosis of anorexia nervosa. International Journal of Eating Disorders, 2(4), 39-43.
- Bell, R. (1985). Holy anorexia. New York: The University of Chicago Press.
- Bemis, K. (1978). Current approaches to the etiology and treatment of anorexia nervosa. Psychological Bulletin, 85(3), 593-617.
- Bemis, K. (1983). A comparison of functional relationships in anorexia nervosa and phobia. in Anorexia nervosa: Recent developments in research, Darby, P., Garfinkel, P., Garner, D. & Coscina, D. (Eds.) New York: Alan R. Liss. 403-415.
- Beumont, P., Beardwood, D., & Russell, G. (1972). The occurrence of the syndrome of anorexia nervosa in male subjects. Psychological Medicine, 2, 216-231.
- Beumont, P., George, G., and Smart, D. (1976). 'Dieters and vomiters and purgers' in anorexia nervosa. Psychological Medicine, 6, 617-622.

- Boskind-Lodahl, M., & White, W. (1983). Bulimarexia: The binge/purge cycle. New York: Norton.
- Brady, J., & Reiger, W. (1972). Behavioral treatment of anorexia nervosa. Proceedings of International Symposium on Behavior Modification, (Minneapolis, Minn.) New York: Academic Press.
- Branch, C., & Eurman, L. (1980). Social attitudes toward patients with anorexia nervosa. American Journal of Psychiatry, 137, 631-632.
- Brownmiller, S. (1984). Femininity. New York: Linden Press.
- Bruch, H. (1971). Anorexia nervosa in the male. Psychosomatic Medicine, 33(1), 31-47.
- Bruch, H. (1972). Eating disorders. New York: Basic Books.
- Bruch, H. (1977). Psychological antecedents of anorexia nervosa. In R. Vigersky (Ed.), Anorexia nervosa. New York: Raven Press.
- Bruch, H. (1978). The golden cage: The enigma of anorexia nervosa. Cambridge: Harvard University Press.
- Bruch, H. (1982). Anorexia nervosa: Therapy and theory. American Journal of Psychiatry, 139(12), 1531-1538.
- Carney, B. (1985) A Preventive Curriculum for Anorexia Nervosa and Bulimia. Bulimia and Anorexia Nervosa Association: University of Windsor.
- Campbell, J., Porter, J. & Moriarty, R. (1986). Anorexia nervosa: Body dissatisfaction in a high risk population. The Canadian Association for Health, Physical Education and Recreation Journal, 52(4), 36-41.
- Casper, H., Eckert, E., Halmi, K., Goldberg, S., & Davis, J. (1980). Bulimia: Its incidence and clinical importance in patients with anorexia nervosa. Archives of General Psychiatry, 37, 1030-1037.
- Ciseaux, A. (1980). Anorexia nervosa: A view from the mirror. American Journal of Nursing, 23, 1468-1472.
- Cobb, S. (1943). Borderlands of psychiatry. Cambridge, Mass.: Harvard



University Press.

- Condon, E. & Smith, S. (1980). The concise home medical guide. New York: Modern Productions.
- Cook, T. & Campbell, D.T. (1979). Quasi-Experimentation. Design & analysis issues for field settings. Chicago: Rand McNally.
- Crisp, A. (1970). Premorbid factors in adult disorders of weight with particular reference to primary anorexia nervosa (weight phobia). A literature review. Journal of Psychosomatic Research, 14, 1-22.
- Crisp, A. (1980). Anorexia nervosa: Let me be. London: Academic Press. Incidence.
- Crisp, A. (1981). Anorexia nervosa at normal body weight. The abnormal weight syndrome. International Journal of Psychiatry in Medicine, 11, 203-233.
- Crisp, A. (1983). Some aspects of the psychopathology of anorexia nervosa. in Anorexia nervosa: Recent developments in research, Darby, P., Garfinkel, P., Garner, D. & Coscina, D. (Eds.) New York: Alan R. Liss. 15-28.
- Crisp, A., & Burns, T. (1983). The clinical presentation of anorexia nervosa in males. International Journal of Eating Disorders, 2, 5-10.
- Crisp, A., Hsu, L., & Harding, B. (1980). The starving hoarder and voracious spender=stealing in anorexia nervosa. Journal of Psychosomatic Research, 24, 225-231.
- Crisp, A., Hsu, L., Harding, B. & Hartshorne, J. (1980). Clinical features of anorexia nervosa. Journal of Psychosomatic Research, 24, 225-231.
- Crisp, A., Palmer, R & Kalucy, R. (1976). How common is anorexia nervosa? A prevalence study. British Journal of Psychiatry, 128, 549-554.
- Cronbach, L. (1970). Essentials of psychological testing (3ed.) New York: Harper & Row.
- Dally, P. & Gomez, J. (1980). Obesity and anorexia nervosa: A question of shape. London: Falkenham Press.

- Darby, P., Garfinkel, P., Garner, D., & Coscina, D. (1983). Anorexia nervosa: Recent Developments in research. Alan R. Liss Inc., New York.
- Dolezal, S. (1983). When food becomes a nightmare. Detroit Free Press, March 20, pp. 1F-6F.
- Edwards, A. (1968). Experimental design in psychological research (3ed). New York: Holt, Rinehart and Winston.
- Fairburn, C. (1980). Self-induced vomiting. Journal of Psychosomatic Research, 24, 193-197.
- Fairburn, C. & Cooper, P. (1982). Self-induced vomiting and bulimia nervosa: An undetected problem. British Medical Journal, 284, 1153-1155.
- Feighner, J., Robins, E., Guze, S., Woodruff, R., Winokur, G. & Munoz, R. (1972). Diagnostic criteria for use in psychiatric research. Archives of General Psychiatry, 26, 57-63.
- Foistein, M., Wakeling, A. & De Souza, V. (1977). Analogue scale measurement of the symptoms of patients suffering from anorexia nervosa. In: Vigersky, R. (ed). Anorexia Nervosa. New York: Raven Press, 21-25.
- Frankenburg, F., Garfinkel, P. & Garner, D. (1982). Anorexia nervosa: Issues in prevention. Journal of Preventive Psychiatry, 1(4), 469-483.
- Freeman, R., Thomas, C., Solyom, L. & Miles, J. (1983). Body image disturbances in anorexia nervosa: A reexamination and a new technique. in Anorexia nervosa: Recent developments in research, Darby, P., Garfinkel, P., Garner, D. & Coscina, D. (Eds.) New York: Alan R. Liss. 117-127.
- Garfinkel, P. (1981). Anorexia nervosa. Medicine North America, 12, 1263-1267.
- Garfinkel, P. & Garner, D. (1982). Anorexia Nervosa: A multidimensional perspective. New York: Brunner/Mazel.
- Garfinkel, P. & Garner, D. (1983). The multidetermined nature of anorexia nervosa. in Anorexia nervosa: Recent developments in research, Darby, P., Garfinkel, P., Garner, D. & Coscina, D. (Eds.) New York: Alan R. Liss. 3-14.

- Garfinkel, P., Moldofsky, H. & Garner, D. (1980). The heterogeneity of anorexia nervosa: Bulimia as a distinct subgroup. Archives of General Psychiatry, 37, 1036-1040.
- Garner, D. (1985). Eating disorders and the fitness craze. Proceedings, Canadian Association for Health Physical/Education and Recreation Conference. Ottawa, Ontario.
- Garner, D. & Garfinkel, P. (1979). The eating attitudes test: An index of the symptoms of anorexia nervosa. Psychological Medicine, 9, 1-7.
- Garner, D. & Garfinkel, P. (1980). Socio-cultural factors in the development of anorexia nervosa. Psychological Medicine, 10, 647-656.
- Garner, D. & Garfinkel, P. (1981). Body image in anorexia nervosa: Measurement, theory and clinical implications. International Journal of Psychiatry in Medicine, 11(3), 263-284.
- Garner, D., Garfinkel, P. & Moldofsky, H. (1978). Perceptual experiences in anorexia nervosa and obesity. Canadian Psychiatric Association Journal, 38, 249-262.
- Garner, D., Garfinkel, P. & Olmsted, M. (1983). An overview of sociocultural factors in the development of anorexia nervosa, in Anorexia nervosa: Recent developments. Darby, P. & Coscina (Eds.). New York: Alan R. Liss. 65-82.
- Garner, D., Garfinkel, P. & O'Shaughnessy, M. (1985). The validity of the distinction between bulimia with and without anorexia nervosa. American Journal of Psychiatry, 142(5), 581-587.
- Garner, D., & Olmsted, M. (1984). Eating disorder inventory manual. USA: Psychological Assessment Resources, Inc.
- Garner, D., Olmsted, M. & Garfinkel, P. (1983). Does anorexia nervosa occur on a continuum? International Journal of Eating Disorders, 2(4), 41-48.
- Garner, D., Olmsted, M. & Polivy, J. (1983a). The eating disorder inventory: A measure of cognitive-behavioural dimensions of anorexia nervosa and bulimia, in Anorexia nervosa: Recent developments. Darby, P. & Coscina (Eds.). New York: Alan R. Liss. 173-184.

- Garner, D., Olmsted, M. & Polivy, J. (1983b). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. International Journal of Eating Disorders, 2, 15-34.
- Garner, D., Olmsted, M., Polivy, J. & Garfinkel, P. (1984). Comparison between weight-preoccupied women and anorexia nervosa. Psychosomatic Medicine, 46, 255-266.
- Goldberg, S., Halmi, K., Eckert, D., Casper, R., Davis, J & Roper, M. (1980). Attitudinal dimensions in anorexia nervosa. Journal of Psychiatric Research, 15, 239-251.
- Gross, M. (1982). Anorexia nervosa: A comprehensive approach. D.C. Heath; Toronto.
- Guiora, A. (1967). Dysorexia: A psychopathological study of anorexia nervosa and bulimia. American Journal of Psychiatry, 124, 391-395.
- Halmi, K. (1974). Anorexia nervosa: Demographic and clinical features in 94 cases. Psychosomatic Medicine, 36, 18-25.
- Halmi, K. (1985). Relationship of the eating disorders to depression: Biological similarities and differences. International Journal of Eating Disorders, 4(4A), 667-680.
- Halmi, K., Falk, J. & Schwartz, E. (1981). Binge eating and vomiting: A survey of a college population. Psychological Medicine 11, 697-706.
- Halmi, K., Goldberg, S., Eckert, E., Casper, H., & Davis, J. (1977). Pretreatment evaluation in anorexia nervosa. In R. Vigersky (ed.) Anorexia Nervosa. New York: Raven Press. 43-54.
- Harding, S. (1985). Anorexia nervosa. Pediatric Nursing, 11(4), 275-283.
- Hawkins, R. & Clement, P. (1980). Development and construct validation of a self report measure of binge-eating tendencies. Addictive Behaviors, 5, 219-226.
- Heilbrun, A. & Bloomfield, D. (1986). Cognitive differences between bulimic and anorexic females: Self-control deficits in Bulimia. International Journal of Eating Disorders, 5(2), 209-222.

Herzog, D. (1982). Bulimia: The secretive syndrome. Psychosomatics, 23, 481-484.

Hogan, W., Huerta, E., & Lucas, R. (1974). Diagnosing anorexia nervosa in males. Psychosomatics, 15, 122-126.

Hooper, M. & Garner, D. (1986). Application of the eating disorders inventory to a sample of black, white and mixed race schoolgirls in Zimbabwe. International Journal of Eating Disorders, 5(1), 161-168.

Humphries, L., Wrobel, S., & Weigert, H. (1982). Anorexia nervosa. American Family Physician, 26(5), 199-204.

Johnson, M. (1982). Anorexia nervosa: Framework for early identification and intervention. Issues in Mental Health Nursing, 4, 87-99.

Jones, D., Fox, M., Babigan, H. & Hutton, H. (1980). Epidemiology of anorexia nervosa in Monroe County, New York: 1960-1976. Psychosomatic Medicine, 42, 551-558.

Kalucy, R., Crisp, A. & Harding, B. (1977). A study of 56 families with anorexia nervosa. British Journal of Medical Psychology, 50, 381-395.

Katz, J. (1985). Some reflections on the nature of the eating disorders: On the need for humility. International Journal of Eating Disorders, 4(4), 617-626.

Kazdin, A. (1980). Research design in clinical psychology. Harper & Row Publishers; New York.

Kendell, R., Hall, D., Hailey, A. & Babigan, H. (1973). The Epidemiology of anorexia nervosa. Psychological Medicine, 3, 200-203.

Kirk, R. (1968). Experimental Design: Procedures for the behavioral sciences. California: Wadsworth Publishing Company.

Landau, E. (1983). Why are they starving themselves? New York. Simon and Schuster.

Leichner, P. (1985). Detecting anorexia nervosa and bulimia. Diagnosis, January, 31-47.

- Leichner, P., Arnett, J., Rallo, J., Srikameswaran, S., & Vulcano, B. (1986). An epidemiologic study of maladaptive eating attitudes in a Canadian school age population. International Journal of Eating Disorders, 5(6) 969-982.
- Levenkron, S. (1982). Treating and overcoming anorexia nervosa. New York: Berne Convention.
- Loro, A. (1982). Treatment for eating disorders. In P. Boudewyns & F. Keefe (Eds.) Behavioral medicine in general practice, Menlo Park, Ca.: Addison Wesley.
- Lucas, A. (1981). Toward the understanding of anorexia nervosa as a disease entity. Mayo Clinic Proceedings, 56 254-264.
- Marrazzi, M. & Luby, E. (1986). An auto-addiction opioid model of chronic anorexia nervosa. International Journal of Eating Disorders, 5(2), 191-208.
- McLaughlin, E., Karp, S., & Herzog, D. (1985). Sense of ineffectiveness in women with eating disorders: A clinical study of anorexia nervosa and bulimia. International Journal of Eating Disorders, 4(4), 511-523.
- McNemar, Q. (1969). Psychological statistics (4ed.) New York: John Wiley and Sons.
- McSherry, J. (1984a). The diagnostic challenge of anorexia nervosa. American Family Physician, 29, (2), 141-145.
- McSherry, J. (1984b). Anorexia nervosa and bulimia: Problems of the "pleasing child". Canadian Family Physician, 30, 1633-1638.
- McSherry, J. (1984). Anorexia nervosa and bulimia: Questions and answers for school personnel. Journal of School Health, 54(8), 299-301.
- Mitchell, J. & Goff, G. (1984). Bulimia in male patients. Psychosomatics, 25(12) 909-913.
- Moriarty, R. (1986). Personal communication.
- Moriarty, R. (1987). Eating disorders and fitness fad. Proceedings Western Fitness Roundup, Banff School of Fine Arts, Banff, Alberta, Canada.

- Muni-Brander, P., & Lachenmeyer, J. (1986). Eating disorders in adolescent males. The Canadian Association for Health, Physical Education and Recreation Journal, 52(4), 27-29.
- Muuss, R. (1985). Adolescent eating disorder: Anorexia Nervosa. Adolescence, 20, 235-245.
- Neuman, P., & Halvorson, P. (1983). Anorexia nervosa and bulimia. A handbook for counsellors and therapists. New York: Van Nostrand Reinhold Company.
- Nunnally, J. (1978) Psychometric theory(2nd ed.). New York; McGraw-Hill.
- Porter, J., Morrell, T., & Moriarty, D. (1986). Primary prevention of anorexia nervosa: Evaluation of a pilot project for early and pre-adolescents. The Canadian Association for Health, Physical Education and Recreation Journal, 52(4), 21-26.
- Pumariega, A., & LaBarbera, J. (1986). Eating attitudes and personality variables in a nonclinical sample. International Journal of Eating Disorders, 5(2), 285-294.
- Russell, G. (1979). Bulimia nervosa-An ominous variant of anorexia nervosa. Psychological Medicine, 9, 429-448.
- Russell, G. (1985). Bulimia revisited. International Journal of Eating Disorders, 4, 681-692.
- SAS Institute Inc. (1985). SAS User's Guide: Statistics, Version 5 Edition. Cary, NC: SAS Institute Inc.
- Schwartz, D., Thompson, M., & Johnson, C. (1983). Eating disorders and the culture, in Anorexia nervosa: Recent developments. Darby, P. & Coscina (Eds.). New York: Alan R. Liss. 83-94.
- Scott, D. (1986). Anorexia nervosa: A review of possible genetic factors. International Journal of Eating Disorders, 5(1), 1-20.
- Selvini-Palazzoli, M. (1974). Anorexia nervosa. London: Chaucer Publishing Co.

- Silverman, J. (1983). Medical consequences of starvation; The malnutrition of anorexia nervosa: Caveat medicus. In Anorexia nervosa: Recent developments in research, Darby, P., Garfinkel, P., Garner, D. & Coscina, D. (Eds.) New York: Alan R. Liss. 293-299.
- Slade, P. (1973). A short anorexic behaviour scale. British Journal of Psychiatry, 122: 83-85.
- Solyom, L., Thomas, C., Freeman, R., & Miles, J. (1983). Anorexia nervosa: Obsessive-compulsive disorder or phobia? A comparative study. In Anorexia nervosa: Recent developments in research, Darby, P., Garfinkel, P., Garner, D. & Coscina, D. (Eds.) New York: Alan R. Liss. 137-147.
- Sours, J. A. (1980). Starving to death in a sea of objects. New York: Jason Aronson.
- Sperling, M. (1978). Psychosomatic disorders in childhood. New York: Jason Aronson.
- Steinhausen, H. (1985). Eating attitudes in adolescent anorectic patients. International Journal of Eating Disorders, 4(4), 489-498.
- Steinhausen, H., & Glanville, K. (1985). Long term course of anorexia nervosa. German Journal of Psychology, 9, 357-368.
- Sterling, J. & Segal, J. (1985). Anorexia nervosa in males: A critical review. International Journal of Eating Disorders, 4, 559-572.
- Strober, M. (1980). Personality and symptomatological features in young, nonchronic anorexia nervosa patients. Journal of Psychosomatic Research, 24, 353-359.
- Szyrynski, V. (1973). Anorexia nervosa and psychotherapy. American Journal of Psychotherapy, 27, 492-505.
- Tabachnick, B. & Fidell, L. (1983). Using multivariate statistics. New York: Harper and Row.
- Taipale, V., Larkio-Miettinen, M., Valanne, E., Moren R. & Aukee, M. (1972). Anorexia nervosa in boys. Psychosomatics, 13, 236-240.



- Thompson, M. & Schwartz, D. (1982). Life adjustment of women with anorexia nervosa and anorexia nervosa-like behavior. International Journal of Eating Disorders, 1(2), 47-60.
- Vandereycken, W. & Meermann, R. (1984). Anorexia nervosa. A Clinician's guide to treatment. Berlin: de Gruyter.
- Walen, S., Hauserman, N. & Lavin, P. (1977). Clinical guide to behavior therapy. New York: Williams and Wilkins.
- Weeda-Mannak, W., Drop, M., Smits, F., Strijbosch, L. & Bremer, J. (1983). Toward an early recognition of anorexia nervosa. International Journal of Eating Disorders, 2, 27-37.
- Willi, J. (1983). Epidemiology of anorexia nervosa in a defined region of Switzerland. American Journal of Psychiatry, 140(5), 564-567.
- Williams, F. (1979). Reasoning with statistics (2nd ed.) New York Holt, Rinehart and Winston.
- Wilson, C. (1982). The fear of being fat and anorexia nervosa. International Journal of Psychoanalytic Psychotherapy, 233-256.
- Wold, P. (1983). Anorexic syndromes and affective disorder. The Psychiatric Journal of the University of Ottawa, 8(3), 116.

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