

ATTITUDES AND BEHAVIORS TOWARD WEIGHT, BODY SHAPE AND EATING
IN MALE AND FEMALE COLLEGE STUDENTS

Stacy L. Lofton, B.S., R.D., L.D.

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APPROVED:

Timothy Bungum, Major Professor
Chwee L. Chng, Committee Member and Program Coordinator
Allen W. Jackson, Committee Member
James R. Morrow, Chair of the Department of Kinesiology, Health
Promotion and Recreation
C. Neal Tate, Dean of the Robert B. Toulouse School of Graduate
Studies

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The purpose of this investigation was to assess the association between body mass index as well as race/ethnicity and established correlates of disordered eating including drive for thinness, body dissatisfaction, bulimia, dietary restraint and social physique anxiety in male and female college students. Difference between actual, desirable and perceived body weight was also assessed. ANOVA suggested that as actual body mass index increased, in general, attitudes and behavior toward weight, body shape and eating increased. A two-tailed t-test suggested that males and females differed significantly with regards to attitudes and behavior toward weight body shape and eating. ANOVA indicated that little to no association existed between race/ethnicity and established correlates of disordered eating.

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CHAPTER 1

INTRODUCTION

Over the past 20 years, research has shown a significant rise, more than 500%, in the incidence of eating disorders (Lutzer & Schatz, 1999). Eating disorders are the third most common chronic illness among females in the United States enacting a major health concern (Steiner-Adair & Purcell, 1996). It is estimated that 5 million Americans are affected by an eating disorder every year (Becker, Grinspoon, Kilbanski, & Herzog, 1999). Eating disorders are increasing at a rate of epidemic proportion and are becoming more widespread throughout the general population. Adolescent girls and young women are suggested to be at the highest risk of developing an eating disorder (Lutzer, & Schatz, 1999; Becker et al., 1999). In fact, gender has been considered to be the most influential factor associated with the prevalence of an eating disorder (Cox, Lantz & Mayhew, 1997). Within this group, collage-aged women have shown the most striking increase (Hesse-Biber, 1992).

Both clinical case series and epidemiological studies support a gender ratio of approximately ten females to one male case (Anderson & Holman, 1997). This gender divergence raises questions regarding etiology, mechanism, treatment and the prevention of eating disorders in females, as well as, in males. Currently, very little research has investigated males and eating disorders. Most research to date has focused on females.

Research has suggested that eating disorders and disordered eating are widespread on college campuses (Mintz & Betz, 1988; Harris, 1995). Eating disorders on college campuses are estimated to be higher than that of the general population. College

campuses have been referred to as a "breeding ground" (Striegel-Moore, Silberstein, & Rodin, 1986) for the development of an eating disorder. When a university is considered from an organizational, community and societal perspective, this finding is not surprising (Sobal, 1995).

From an organizational level, a college or university campus provides an important context within which weight-related behaviors are enacted. Often a climate is provided that may support or repress changes in behaviors and weight levels (Sobal, 1995). A college or university is a "community". Communities provide a context in which people live their lives. Within this community interests and values are shared that may encourage an individual to be overweight or underweight depending upon the variation in social support that is provided to be thinner or fatter (Sobal, 1995). Finally, a college or university is a "society". Within the context of a society, social values that shape weight are formed. Values regarding eating and body shape are transmitted and reinforced (Sobal, 1995).

Most evidence to date suggests that eating disorders are linked to multiple factors. Many of which have been identified as the following: demographics: *female, age, weight and race*; developmental factors; sociocultural factors -*body dissatisfaction, drive for thinness and social physique anxiety*; and eating behaviors -*excessive weight concern and dietary restraint*. The college environment and college experience can potentate or exacerbate many of these contributing factors (Klemchuk, Hutchinson, & Frank, 1990).

A well-known risk factor leading to the development of an eating disorder is body dissatisfaction (Wong & Huang, 1999; Sciacca, Melby, Hyner, Brown & Femea, 1991).

Studies investigating gender differences consistently show that men and women differ in perception of and dissatisfaction with their bodies (Connor-Green, 1988; Rolls, Fedoroff & Guthrie, 1991; Anderson & Holman, 1997). There is some evidence that gender differences exist not only in importance attached to weight and shape but in what is perceived as “ideal” (Rolls et al., 1991). Whereas, women tend to overestimate their body size, men are less critical of their bodies and, in general, perceive their size and shape as normal (Hart, Leary & Rejeski, 1989).

Obesity is a highly stigmatized condition. Society values attractiveness and thinness leading to a continual shift toward a thinner standard for body weight (Streigel-Moore et al., 1986). Since 1960, the number of overweight and obese men and women has increased. Over the last decade, the percentage of overweight and obese adults age 20 years or older has increased to 54.9% (National Heart, Lung & Institute [NHLBI], 2000). This increase has widened the gap between the “thin-ideal” and ones actual body weight resulting in a continual pursuit of thinness (Stice, 1994).

With the prevalence of eating disorders significantly increasing on college campuses, it is essential that they be fully understood so that prevention efforts can be designed and implemented. In order to prevent eating disorders, one must first understand what *causes* them and institute programs that mitigate those causes to teach individuals how to deal with them (Werheim, Paxton, Schultz, & Muir, 1997). Without first understanding the mutual relationship between individuals and their environment, and the forces that work on individuals in the culture in which they develop, eating behaviors and

attitudes toward physical build and body image cannot be understood (Latzler & Schatz, 1999).

The purpose of this study was to:

- 1) Assess the association between body mass index and drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint.
- 2) Assess the difference between male and female college students with regard to drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint.
- 3) Assess the association between race/ethnicity and drive for thinness, body dissatisfaction, and bulimia, social physique anxiety and dietary restraint.

Justification of the Study

Eating disorders have become a widespread problem on college campuses today. Despite the fact that many researchers have stressed the importance of developing programs that aim at reducing risk factors, few programs directed toward college students have been reported. Knowledge of risk factors is a necessary prerequisite for primary and secondary prevention. For prevention efforts to be effective, intervention strategies need to be targeted at factors that are related to the development and maintenance of disordered eating and eating disorders specific to the "targeted" campus and its "subgroups". Hence, this study will seek to add to this knowledge in an effort to identify factors that are specifically related to male and female college students at the University of North Texas.

Research Questions

The following research questions were investigated:

1. Is body mass index associated with established correlates of disordered eating including drive for thinness, body dissatisfaction and bulimia, dietary restraint and social physique anxiety?
2. What is the difference between male and female college students with regard to drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint?
3. Is race/ethnicity associated with established correlates of disordered eating including drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint?

Definition of terms

1. Actual Body Mass Index (ABMI): An index of the subject's self-reported current weight (kg) in relation to their self-reported height. Actual body mass index was determined by dividing their weight (kg) by the square of their height in meters (m²).
2. Desirable Body Mass Index (DBMI): An index of the subject's self-reported desirable body weight (kg) in relation to their self-reported height. Desirable body mass index was determined by dividing their desirable body weight (kg) by the square of their height in meters (m²).
3. Body Mass Index Categorized: Each subject's actual and desirable body mass index was categorized into the following four categories based on guidelines established by the National Heart and Lung Blood Institute [NHLBI] (1998).

- a) Underweight: BMI <18.5
 - b) Normal weight: BMI 18.5-24.9
 - c) Overweight: BMI 25.0-29.9
 - d) Obese: BMI >30
4. Drive for thinness: Drive for thinness was measured using the seven-item self-reported scale of the Eating Disorder Inventory (Garner, Olmstead & Polivy, 1983). Drive for thinness is a term used to indicate an excessive concern with dieting, preoccupation with weight and entrenchment in the pursuit of thinness (Garner et al., 1983).
 5. Body Dissatisfaction: Body dissatisfaction was measured using the nine-item scale of the Eating Disorder Inventory (Garner et al., 1983). Body dissatisfaction reflects the belief that specific parts of the body associated with shape change or increased fatness at puberty are too large (Garner et al., 1983).
 6. Bulimia: Bulimia was measured using the seven-item scale of the Eating Disorder Inventory (Garner et al., 1983). Bulimia indicates the tendency toward episodes of uncontrollable overeating and may be followed by the impulse to engage in self-induced vomiting (Garner et al., 1983).
 7. Dietary Restraint: Dietary restraint was measured using a ten-item self-reported scale (Herman & Mack, 1975). Dietary restraint is defined as a persons intent to restrict dietary intake in order to control body weight (Herman, 1978).
 8. Social Physique Anxiety: Social physique anxiety was measured using a twelve-item self-reported scale (Hart et al., 1989). Social physique anxiety is a "subtype of social

anxiety that occurs as a result of the prospect or presence of interpersonal evaluation involving one's physique” (Hart et al., 1989).

9. College Student: All undergraduate students at the University of North Texas.

Limitations

1. Use of a convenience sample may limit the generality of the results of this study.
2. Use of self-report questionnaires may result in distortion due to response style bias and inaccurate reporting by the subject.

Summary

With countless college campuses and universities reporting startling increases in eating disorders and disordered eating among their students, it is essential that they be understood so that prevention efforts can be designed and implemented. The literature suggests that in order for these prevention efforts to be effective intervention strategies need to be tailored at factors specific to the "targeted" campus and its "subgroups". To meet this need, male and female college students at the University of North Texas were studied in an effort to identify factors associated with disordered eating including drive for thinness, body dissatisfaction and bulimia, dietary restraint, social physique anxiety, body mass index and race/ethnicity. Additionally, this study sought to identify similarities as well as differences in male and female college students relative to factors associated with disordered eating. Presented in this chapter were research questions, definition of terms and limitations of the proposed study.

CHAPTER 2

LITERATURE REVIEW

This chapter includes literature review related to the prevalence of eating disorders; limitations to the research on prevalence of eating disorders; contributing factors to the development of an eating disorder including drive for thinness, body dissatisfaction, social physique anxiety, and dietary restraint; developmental factors, and the college environment. Additionally, the treatment and prevention of eating disorders will be briefly discussed.

Definition of an Eating Disorder

Eating Disorders are characterized by extreme emotions, attitudes and behaviors surrounding weight and food issues experienced by both males and females. Eating disorders include anorexia nervosa, bulimia nervosa and binge-eating disorder (compulsive overeating). Additionally, eating disorder not otherwise specified (EDNOS) is an eating disorder which includes some combination of the signs and symptoms of anorexia, bulimia and/or binge-eating disorder; however, these behaviors are not considered a full-syndrome, clinically. Anorexia nervosa is characterized by a refusal to maintain a minimally normal body weight. Bulimia nervosa is characterized by repeated episodes of binge eating followed by inappropriate compensatory behaviors such as self-induced vomiting, misuse of laxatives, diuretics, or other medications; fasting; or excessive exercise. An essential feature of both disorders is a disturbance in body shape and weight. Binge-eating disorder is characterized primarily by periods of uncontrolled impulsive or continuous eating beyond the point of feeling comfortably full. Often, there

is no compensatory behavior; however, sporadic fasting and/or dieting may follow a binge (American Psychiatric Association [APA], 1994; Eating Disorder Awareness and Prevention [EDAP], 1998).

Prevalence of Eating Disorders

Over the last twenty years there has been a significant increase in bulimia nervosa, whereas the occurrence of anorexia has remained stable (Rolls, Fedoroff & Guthrie, 1991). Conservative estimates indicate that after puberty, 5-10% (5 to 10 million) of girls and women will struggle with an eating disorder (EDAP, 1998). The mortality rate of anorexia and bulimia has been reported to range between 5% and 20%. Furthermore, an additional 25% will continue to have a chronic illness for the rest of their lives (Rolls et al., 1991).

Many individuals struggle with body dissatisfaction and sub-clinical eating disorder attitudes and behaviors. Ninety percent of all eating disorders have been associated with females. Ten percent have been associated with males, making gender one of the most influential variables associated with the prevalence of eating disorders (Cox, Lantz & Mayhew, 1997). The etiology behind this gender divergence is unknown (Anderson & Holman, 1997).

Throughout the United States, countless colleges and universities are reporting startling increases in eating disorders and disordered eating among their students (Hesse-Biber, 1992). One of the most puzzling aspects of this phenomenon is that the problem is not quite what it appears to be. From a diagnostic standpoint, there are important differences between the clinical disorders and the disordered eating patterns currently

sweeping college campuses nationwide (Hesse-Biber, 1989). In support of this assertion, Kurth, Krahn, Nairn, and Drownowski (1995) reported that there is a large group of young women who do not meet all of the criteria for bulimia nervosa, but who are engaged in potentially dangerous eating patterns of weight control and binge-eating behaviors.

Eating disorders on a college campus are estimated to be higher than that of the general population. It has been estimated that approximately 1-3% of the general population is affected by an eating disorder (Shisslak, Crago & Estes, 1995; Fairburn & Beglin, 1990). Whereas, 3-19% of college females have been estimated to have bulimia nervosa and 1-2% have anorexia nervosa (Striegel-Moore, Silberstein, Frensch & Rodin, 1988; Kurtzman, Yager, Landsverk, Weismeier & Bodurka, 1989; Drownowski, Hopkins, & Kessler, 1988; Zuckerman, Colby, Ware & Lazerson, 1986; Provost, 1989; Kashubeck, Walsh & Crowl, 1994; Heatherton, Nichols, Mahamedi & Keel, 1995). The prevalence of bulimia nervosa in men is estimated to be approximately one-tenth of that in females (APA, 1994). Limited research is available on the prevalence of anorexia nervosa in males (APA, 1994).

Few college-aged women and men meet the formal diagnostic criteria established by American Psychiatric Association, for eating disorders. However, a significant percentage are at risk to develop pathological eating sometime during their college years (Franko, 1998). Garfinkel (1995) suggested that disordered eating in college females is approximately 3 to 5 times greater than women with a clinical diagnosed eating disorder.

Research documenting the rate of disordered eating in male college students remains limited.

Limitations to Research on Prevalence of Eating Disorders

Numerous studies have been conducted on the prevalence of eating disorders. Most studies have investigated Caucasian females between fourteen and forty years of age (Fairburn & Beglin, 1990). In college students the estimate of prevalence and incidence of eating disorders has varied considerably. Many studies have exclusively relied on subject's responses to self-report questionnaires. Recently studies have employed the use of clinical interviews either alone or in addition to the self-reported questionnaire (two-stage surveys). Two-stage surveys utilizing strict diagnostic criteria demonstrate lower rates of prevalence than surveys that rely exclusively on self-reported data (Hoek, 1995). Moreover, among studies using self-report questionnaires, there have been a variety of instruments used, with differing content, validity and reliability (Provost, 1989).

Diagnostic criteria have become more sophisticated in the way that eating disorder symptoms are defined (Heatherton, Nichols, Mahamedi & Keel, 1995). In the early 1980's diagnostic criteria (DSM III) was considered to be overly inclusive. The DSM-III criteria in which many of the early studies were based did not specify a required frequency of eating binges. Additionally, a "binge" remained undefined and the presence of fasting, purging and/or vomiting for diagnosis was not required. (Drewnowski, Hopkins & Kessler, 1988).

In 1987, the DSM-III criteria were revised (DSM-III-R) and diagnostic criteria became more clearly defined. In the revised edition, the binge frequency was established and the regular use of fasting, purging or vomiting to counteract the effects of a binge was included. Additionally, criteria emphasized that difficulty with self-control and an over concern with body weight and shape was at the heart of the disorder (Heatherton et al., 1995).

Today, the most current diagnostic criteria are the DSM-IV published by the American Psychiatric Association in 1994. The most significant change between the DSM III-R and DSM-IV is the addition of criteria for eating disorder not otherwise specified (EDNOS) and the provisional diagnosis of binge-eating disorder. The EDNOS category consists of individuals who have an eating disorder of clinical severity; however, they do not meet the diagnostic criteria for anorexia or bulimia nervosa (Mizes & Sloan, 1998).

It has been suggested (Bunnell, Shenker, Nussbaum, Jacobson & Cooper, 1990) that DSM-III-R diagnostic categories excluded substantial numbers of individuals with significant eating pathology who did not meet the formal diagnostic criteria for either anorexia nervosa or bulimia nervosa. Whereas, the DSM-IV criteria attempts to formulate discrete categories from patterns of behavior that may exist on an eating disorder continuum ranging from partial to full-syndrome eating disorders.

As the diagnostic criteria for anorexia nervosa and bulimia nervosa have become more stringent and diagnostic methods have become more advanced, the rate of prevalence has declined. However, symptomatic behavior as specified in the criteria for

eating disorder not otherwise specified continues to exist as evidenced by the increasing rates of pathological eating or partial-syndrome eating disorders documented in the literature (Garfinkel, 1995; Alexander, 1998; Shisslak et al., 1995)

An additional limitation of eating disorder prevalence includes low response rate. A low response rate is a significant source of bias since the respondents may not be representative of the sample from which they were drawn. It has been suggested that figures obtained on the prevalence of eating disorders may be an underestimate of the true rate considering the evidence that eating disorders are often over-represented among those who chose not to participate in prevalence studies (Fariburn & Beglin, 1990).

Contributing Factors to the Development of an Eating Disorder

The etiology of an eating disorder is generally considered multi-risk or multifaceted. The multidimensionality of eating disorders reflects the heterogeneity of the population and the diversity of the symptoms (Bilich, 1989). The implications of this heterogeneity for identifying risk factors are crucial. A particular risk factor that may be central to the etiology of the disorder in some individuals may be minor or even irrelevant in the development of an eating disorder in others (Streigel-Moore, Silberstein & Rodin, 1986). Eating disorders can be seen as the final common pathway of a number of etiological factors interacting with one another (Bilich, 1989).

Risk for an eating disorder is influenced by several classes of predisposing or vulnerability factors. Eating disorders are biological, psychological, sociocultural, environmental, cognitive, behavioral and developmental disorders (Leon, Keel, Klump, & Fulkerson, 1997). For the purposes of this investigation, the focus will be on the

sociocultural, environmental and developmental factors that may contribute to the development and/or progression of clinical and sub-clinical eating disorders.

Sociocultural Factors

Of the factors theorized to play a role in the development of an eating disorder, sociocultural factors are considered paramount (Streigel-Moore et al., 1986; Stice, 1994). Sociocultural forces include the thin-ideal body image espoused by women, the centrality of appearance in the female gender role, and the importance of appearance for women's societal success (Stice, 1994). Eating disorders, according to the sociocultural model are a product of the increasing pressure put upon women today to achieve an ultra slender body (Streigel-Moore et al. 1986; Stice, 1994). As a result of this societal obsession with ultra slenderness, a moderate degree of body dissatisfaction is considered to be "normative" among women (Rodin, Silberstein & Striegel-Moore, 1985; Stice, 1994). With the increased rate of clinical and sub-clinical eating disorders presenting in males, research has begun to investigate the sociocultural forces that increase a males susceptibility to developing an eating disorder. Research remains limited and additional research is needed.

Drive for Thinness

Distorted attitudes about weight and shape have been described as the core symptom in eating disorders (Connor-Greene, Streigel-Moore & Cronan, 1994). Theorists have hypothesized that the pursuit of the "thin-ideal" promotes the development of an eating disorder (Garner, Olmstead, Polivy, 1983; Striegel-Moore et al., 1986; Stice, 1994), particularly in populations where the pressure to be thin is greatest

(Cachelin, Striegel-Moore & Paget, 1997). Drive for thinness has been described as an excessive concern with dieting, preoccupation with weight and entrenchment in an extreme pursuit of thinness (Garner et al., 1983). Moreover, drive for thinness is considered to be a "cardinal" feature of an eating disorder.

Over the last several decades, slenderness has been judged by women to be one of the most important determinants of physical attractiveness. Moreover, there has been a continual shift toward a thinner standard for body weight (Stice, 1994; Garner, Garfinkel, Schwartz & Thompson, 1980; Rolls et al., 1991). Whereas, the average weight of women today has increased, the gap between the "thin-ideal and ones actual weight has widened resulting in a continuous pursuit of thinness. Society values attractiveness and thinness making obesity a highly stigmatized condition (Striegel-Moore et al., 1986). Today, the present cultural ideal of the feminine figure has led women to resort to dieting to reach this goal (Rolls et al., 1991). The thin ideal is considered to be etiologically significant as evidenced by the shrinking ideal and apparent increase in clinical and sub-clinical eating disorders (Stice, 1994).

Being exposed to general cultural pressures to be thin; however, does not specifically identify which individuals will develop an eating disorder (Leon et al., 1997). Although over concern with body shape is characteristic of an eating disorder, in particular bulimia, the sociocultural theorists posit that hyper-internalization of the thin-ideal is a prerequisite for development of an eating disorder (Striegel-Moore et al., 1986). In theory, it is thought that in order for one to purge in an effort to manage their weight, a heightened endorsement of the thin ideal would be necessary (Stice, 1994). Utilizing

college students, Mintz and Betz (1988) found that individuals with bulimia evidenced greater endorsement of sociocultural mores regarding the desire to be thin than chronic dieters and controls. Garner et al. (1983) found that individuals with bulimia scored significantly higher than controls on the drive for thinness sub-scale of the Eating Disorder Inventory; a scale assessing over concern with dieting, preoccupation with weight and obsession with the thin-ideal. Finally, Timko, Striegel-Moore, Silberstein & Rodin (1987) found that the importance attached to appearance such as slimness and attractiveness was positively related with eating disorders symptoms.

Body Dissatisfaction

A well-known risk factor leading to the development of an eating disorder is body dissatisfaction (Wong & Huang, 1999; Sciacca, Melby, Hyner, Brown & Femea, 1991). Many young women have inappropriate body image concerns (Hendricks & Herbold, 1998), whereas men appear to be more satisfied with their body shape (Connor-Greene, 1988; Drewnowski & Yee, 1987; Rolls et al., 1991). Men are more likely to see themselves as underweight and want to be heavier. In contrast, women perceive themselves to be overweight. Furthermore, men are more often satisfied with how they perceive their current body weight than women. Cash, Winstead & Janda (1986), in a national survey reported that 41% of men are dissatisfied with their weight compared to 55% of women. Additionally, they reported that 77% of underweight men liked their appearance as opposed to 83% of underweight women. Similarly, Smolak (1996) estimated that 80% of American women are dissatisfied with their appearance. Males are more likely than females to report that if they are fit and exercise they fill more positive

about their bodies. Women were more concerned with aspects of their appearance, particularly their weight.

The internalization of sociocultural pressures is thought to produce body dissatisfaction in some proportion of women (Stice, 1994). Researchers have suggested that women who are dissatisfied with their body have internalized some ideal referent (Stice, 1994; Rolls et al., 1991). Individuals who internalize these values and beliefs, equating thinness with attractiveness and success, exhibit greater preoccupation with weight and dieting and may be more likely to develop an eating disorder (Striegel-Moore et al., 1986; Rolls et al., 1991).

In support of this assertion, Mintz & Betz (1988) found that body dissatisfaction correlated with bulimia. Furthermore, Striegel-Moore, Silberstein, Frensch, & Rodin (1988) in a prospective study of college freshman found that decreased satisfaction with weight and attractiveness was associated with increased eating pathology. Finally, Stice, Schupak-Neuberg, Shaw & Stein (1994) found that body dissatisfaction mediated the relation between the endorsement of the thin ideal and eating pathology.

It has been proposed that body weight may interact with internalized ideals to produce body dissatisfaction (Stice, 1994). In a study designed to obtain baseline data regarding desired body weight, weight satisfaction and self-perceived weight categories in female college students, Wong & Huang (1999) reported that more than 20% and 50% of underweight subjects (BMI <18.5) and acceptable weight (BMI <21.7) subjects, respectively, wanted to lose weight. Furthermore, a significant incongruity between the subjects "self-perceived" body weight status and their actual weight category existed.

Fifty-one percent of subjects perceived themselves as overweight or obese, whereas only 16% of subjects were classified as overweight or obese. Similarly, 56% of subjects in the acceptable weight category perceived themselves as overweight or obese. This data is consistent with other research indicating that a much higher percentage of college females perceive themselves as overweight or obese than are actually overweight or obese (Siacca et al., 1991; Haberman & Luffey, 1998; Heatherton et al., 1995). Furthermore, dissatisfaction with weight has been positively related to overall body dissatisfaction and the difference between current and ideal body size (Silberstein, Striegel-Moore, Timko & Rodin, 1988).

In a similar study, Wong, Chen, Chan, Wang and Yamamoto (1999) obtained baseline data regarding body mass index, weight satisfaction and weight perception in male college students. Wong et al. (1999) reported that in general, the subjects self-perceived weight categories were similar to the standard weight categories. However, despite not being overweight, 34% of subjects were attempting to lose weight. Additionally, 14% of the males at an acceptable weight ($BMI < 22.5$) perceived themselves as overweight or obese. The main approach to losing weight for all subjects despite weight category was exercise. These findings are similar to those found by Drenowski & Yee (1987). As similarly observed in the female college students (Wong & Huang, 1999), an inverse relationship between BMI and satisfaction with body weight was observed in male college students (Wong et al., 1999).

Unrealistic weight goals and misperception of body image are major risk factors responsible for the increasing incidence of eating disorders (Wong & Huang, 1999).

Individuals who perceive themselves as overweight are prone to chronic dieting and eating disorders (Sciacca et al., 1991; Wong & Huang, 1999). Partially responsible for unrealistic weight goals sought by young adults is social judgement of appearance (Wong & Huang, 1999).

Social Physique Anxiety

Social physique anxiety is "a subtype of social anxiety that occurs as a result of the prospect or presence of interpersonal evaluation involving ones physique (Hart, Leary & Rejeski, 1989)." Physique is ones body form and structure, in particular body fat, muscle tone and general body proportions. Although related, Hart et al. (1989) argue that body image and social physique anxiety are not isomorphic. They are conceptually distinct. Social physique anxiety deals with the social aspect of body dissatisfaction. Diehl, Johnson, Rogers and Petrie (1998) state that social physique anxiety is a psychosocial variable that may be important in the understanding of disordered eating.

The literature suggests that individuals with high social physique anxiety are less likely to exercise as a means of reducing their weight and changing their body shape and are more likely to be concerned with the size and shape of their body (Crawford & Ekland, 1994). Hart et al. (1989) hypothesize that social physique anxiety may lead to the avoidance of situations in which the body is on display reducing the likelihood of involvement in activities that may improve their physique. Additionally, it has been suggested that women may turn to pathogenic weight control behaviors instead of involving themselves in a healthy exercise program to deal with high levels of body dissatisfaction.

In a study of college males and females, Cox, Lantz & Mayhew (1997) found that social physique anxiety was the major predictor of disordered eating behavior, with high social physique anxiety scores associated with a greater tendency toward disordered eating behavior. Furthermore, Diehl et al. (1998) concluded that social physique anxiety was strongly related to bulimic symptoms and moderately related drive for thinness and should be considered as a possible risk factor in the development of eating disorders. Furthermore, investigators have suggested that individuals with higher physique anxiety had a greater body mass (Diehl et al., 1998) and body fat percent (Cox et al., 1997).

Despite these findings, limited research has investigated an individual's self-presentational concerns with how others perceive their physiques. More importantly, limited research has investigated how these concerns relate to disordered eating behavior (Cox et al., 1997; Diehl et al., 1998).

Dietary Restraint

Research has hypothesized that body dissatisfaction leads to dietary restraint which in turn is viewed as being one of the main mediating mechanisms leading to an increase in binge eating and bulimic symptoms (Stice, 1994). It is assumed that body dissatisfaction leads to dietary restraint because of the belief that restrained eating will result in weight loss and ultimately "thinness". Similarly, research has supported the argument that it is body dissatisfaction or fears about body shape and weight that cause widespread dieting and chronic dieting (Thompson, Coover, Richards, Johnson & Cattarin, 1995; Stice, 1994; Cash & Henry, 1995).

An overwhelming number of women and to a smaller extent, men currently feel too fat regardless of their actual body weight and engage in repeated dieting efforts (Striegel-Moore, McAvay & Rodin, 1986). Weight concerns and dieting has become so pervasive among females today that they have become "normative" (Rodin et al., 1985; Polivy & Herman, 1987). Such high levels of dieting are of concern because many restrained eaters display attitudes and behaviors characteristic of persons with eating disorders (Polivy & Herman, 1987) and the incidence of dieting has been found to be directly proportional to the prevalence of eating disorder (Cachelin, Striegel-Moore, & Paget, 1997). Dieting is one of the most common practices among individuals who intend to lose weight. It has been estimated to occur in a high percentage of females (Wong & Huang, 1999) and men (Wong et al., 1999) regardless of their weight category. Reasons for dieting cited by males include (a) to be more attractive to another male or female, (b) because of an actual history of obesity, and (c) for muscular definition (Anderson, 1988; Rolls et al., 1991). Additionally, Anderson and Holman (1997) suggest that males diet (1) to avoid repetition of childhood teasing for fatness, (2) to approve sports performance, (3) to avoid weight-related medical complications that father had, and (4) to improve gay relations. In contrast, women frequently cite appearance and slimness as their main reason for dieting (Rolls et al., 1991). Schwartz, Thompson & Johnson (1991) reported that 75% of women in their study cited appearance, rather than health, as their reason for wanting to lose weight. In general, males diet as a means to an end, while females most often diet as an unquestioned social practice and see weight loss as the goal in itself (Anderson & Holman, 1997).

Dieting or watching one's weight has become a lifestyle for many college women (Hendricks & Herbold, 1998). In a sample of 643 women, Mintz and Betz (1988) suggested that 82% of subjects reported some type of daily dieting behavior, 33% reported serious forms of dieting behavior monthly, and 38% reported bingeing problems.

Dieting, for many students begins at an early age. Prior to the start of college, many students have established dieting behavior. Whereas others, begin to diet in college (Hendricks & Herbold, 1998). In a prospective study of the prevalence of eating disorders in college students, Striegel-Moore et al. (1989) reported that 64% of the young women surveyed had dieted before college. Of the students who had not dieted prior to college, 25% engaged in such behavior during their first year at school. Moreover, 43% reported a history of binge eating, and 15% with no prior history of binge eating began to binge in college (Striegel-Moore et al., 1989).

Similarly, Kurth et al. (1995) reported that 91% of college females have attempted to control their weight through dieting. Twenty-two percent of those surveyed reported a dieting frequency of "often" or "always".

It is estimated that 35% of "normal dieters" will progress to pathological eating. Of those, 20-25% will progress to partial or full-syndrome eating disorders (Shisslak & Crago, 1996).

Dietary restraint has been described as a person's intent to restrict dietary intake in order to control body weight (Herman & Mack, 1975). Dietary restraint has been identified as one of the main factors underlying the eating behavior of many eating

disordered individuals (Ricciardelli, Tate & Williams, 1997), particularly bulimia nervosa and binge eating disorder (Polivy & Herman, 1985). In theory, it is thought that dietary restraint will lead to binge eating because of physiological as well as psychological consequences. In turn, binge eating is thought to precipitate the full binge-purge cycle of bulimia nervosa in susceptible individuals (Stice, Ozer & Kees, 1997). Consistent with this theme, clinical and empirical descriptions of women with bulimia nervosa suggest that the majority report that binge eating began during or after a period of restrictive dieting (Bulik, Sullivan, Carter & Joyce, (1997). Similarly, dietary restraint has been shown to account for a significant amount of variance in pathological eating and bulimic behavior in non-clinical populations (Polivy & Herman, 1975). It has been suggested that subjects who measure "high" on restrained eating (consciously restrict their eating behavior and are frequently preoccupied with their weight, shape and food intake) are more prone to binge eating than subjects who measure "low" on dietary restraint (Ricciardelli et al., 1997).

In a study comparing college women with various levels of dietary restraint with body image measures, personality and psychopathology, family environment and eating and weight-related concerns, investigators found that chronic dieters (high restraint) displayed significantly more body distortion, drive for thinness, and body dissatisfaction. Furthermore, drive for thinness and body dissatisfaction appeared to increase linearly with degree of dietary restraint (Cachelin, et al., 1997).

Investigations of samples of non-clinical young women have found a "normative discontent" with body size and high rates of dieting (Rodin et al., 1985). Many young

women express concerns about dieting and body size and appearance which are comparable to the level of concern expressed by women diagnosed with anorexia or bulimia nervosa (Polivy & Herman, 1985).

Eating Disorder Continuum

Debate in the field of eating disorders has centered on the issue of continuity versus discontinuity between dieting women (non-clinical) and those with clinical eating disorders (Cachelin et al., 1997). Researchers have argued that disordered eating lies on a continuum with dieting behavior. Supporters of this position argue that a direct link exists between dieting and disordered eating. However, in contrast, opponents of this position argue that underlying factors or influences motivating dieting behavior might be fundamentally different for clinical and non-clinical groups (Garner et al., 1983).

In a study comparing eating disordered subjects and weight-preoccupied college and ballet students, results showed the weight-preoccupied group to be similar to the eating disordered group in disturbances in dieting, perfectionism and attitudes about their shape. However, other similarities including ineffectiveness, lack of interoceptive awareness and interpersonal distrust were not shared (Garner et al., 1983). Despite opposing views it is generally agreed upon that eating disordered patients and weight-preoccupied dieters do share similar pathological behaviors and attitudes. The drive for thinness and its associated concern with dieting, weight and appearance; the bulimia (binge eating with or without purging) and the intense dissatisfaction with one's body that characterize eating disorders appear to a greater or lesser extent among many normal dieters (Polivy & Herman, 1987; Stice, 1994). Moreover, dieting can clearly be

associated with some of the pathology accepted as a core feature of an eating disorder (Fairburn & Garner, 1986).

However, despite the existence of such differences, research remains unclear as to whether they are directly associated with dietary restraint, increasing as levels of restraint increases or whether they characterize particularly a subgroup of dieting women (Cachelin et al., 1997).

Developmental Factors

Developmental tasks such as identity, independence, intimacy and emotion management can be aggravating factors in the initial course or exacerbation of eating disorders in young adults (Provost, 1989).

For many college students, they must move from dependence to independence in decision-making, and in emotional and material support (Provost, 1989). In many instances this can be overwhelming, especially for the student in enmeshed relationships with parents or students who almost exclusively focus on the approval of family members (Provost, 1989). At this time of turbulence, for many, weight is often perceived as something that can be controlled when everything else feels out of control. Concern with body weight and shape leads to dieting as a way to take control and gain independence (Rolls et al., 1991). Dieting is often considered a metaphor for independence (Rodin, Striegel-Moore & Silberstein, 1990). However, for some individuals, dieting may provide a refuge against gaining independence and hence, maturity. Garner et al., (1983) defined this as "maturity fears" or one's wish to retreat to the security of the preadolescent years because of the overwhelming demands of adulthood.

College is a period in time when many individuals are seeking their own identity separate from that of their family. Identity consists of the establishment of their own values, beliefs, and sense of self, including acceptance of their gender as well as their role within society. Today, it has become "normative" for college women to aspire to complete a higher education and to develop an independent career (Gordon, 1989). Young women today continue to experience anxiety over identifying themselves in relation to the traditional female role in which one remains dependent and orientated toward the needs of others and the prevailing pressures and expectations to achieve in which they become independent, ambitious and academically successful (Provost, 1989, Gordon, 1989). Central features of the female gender role as alleged by theorists are being concerned with appearance and making efforts to enhance and preserve one's beauty (Stice, 1994). Endorsement of the female gender role has been correlated with affirmation of the ideal-body stereotype. Timko et al., (1987) found that self-reported femininity was positively related to importance attached to appearance. Furthermore, researchers have suggested that attractive females are perceived as more sociable, dominant, mentally healthy, intelligent and socially skilled than their less attractive counterparts (Stice, 1994). The idealization of the thin female form and pressures on women to compete, and perform well, yet be attractive and feminine all contribute to the social pressures on women that could put them at risk of an eating disorder (Rolls et al., 1991).

Young people must develop interpersonal skills such as trust, self-disclosure and sexual competence in forming close or intimate relationships (Provost, 1989). The

development of an eating disorder has been associated with the presence of interpersonal distrust, a concept defined by Garner et al. (1983). Interpersonal distrust reflects a sense of alienation and general reluctance to form close relationships. It relates to an inability to form attachments or feel comfortable expressing emotions to others.

Learning to recognize, accept and express an appropriate range of emotions is a major developmental task for young adults. It has been suggested that individuals with eating disorders may lack assertiveness, as well as the ability to manage anger, conflict and stress (Provost, 1989). For many, bingeing and purging is how they deal with the additional stress of college. For others, restricting food may simulate control, especially when they do not feel in control of their emotions or their environment. "Ineffectiveness" or "feeling out of control" is a characteristic commonly found in individuals with eating disorders (Garner et al., 1983). Research has suggested that ineffectiveness is highly correlated with feelings of inadequacy, depression and external locus of control (Garner et al., 1983). Control of one's body demonstrates control of one's life (Johnson, Tobin & Steinberg, 1989).

For many college students, an unrecognized continued dependency on parents and lack of experience in exerting personal power with decision making as well as increasingly mature emotional demands for self-reliance all suggest potential problems in living and functioning in this more independent, less controlled college environment (Dickstein, 1989).

The body is considered to be a concrete manifestation of the self. Eating disordered individuals are often aware of a physical sense of self rather than their "inner"

or emotional component of self (Steiner-Adair, 1986). This has been termed the "superwomen" ideal. A woman whom appears to have it all by today's standard is someone with a successful career, a family with out sacrificing quality and remains physically attractive. Many individuals struggling for their "own" identity grasp onto this ideal in pursuit of their own identity. When their sense of self doesn't match this, the pursuit of thinness ensues and the path to pathological eating is created (Striegel-Moore et al., 1986).

Eating disorders can become a mechanism for coping with problems relating to separation, intimacy, identity, and self-esteem. An eating disorder may provide assistance to an individual faced with the strenuous and unexpected demands of organizing thier own time, and to tolerate loneliness, intimacy, feelings of inadequacy, and other strong and unacceptable feelings (Barth, 1989).

The College Environment

Both indirectly and directly, the college environment, might, in vulnerable students, facilitate and foster the occurrence of an eating disorder (Dickstein, 1989). For many, college is a period of time when students discover who they are; they experience independence for the first time, develop intimate relationships and learn to manage their emotions. For some, the transition to college can be very difficult.

Researchers have hypothesized that eating disorders are a culture-bound syndrome, a compilation of symptoms that are not universally found in human populations but are to limited to a specific culture (Stice, 1994) and environment (Rolls et al., 1991). The college environment has been described as a semi-closed environment

(Striegel-Moore et al., 1986). Within this environment there is an increased sociocultural pressure to be thin. Research suggests that people in subcultures where the "ideal-thin" body image is magnified places its members at an increased risk for developing an eating disorder (Garner et al., 1983; Stice, 1994). It has been suggested by Squire (1983) that the incidence of bulimia is greater in boarding schools and college dorms. Additionally the rate of bulimia is suggested to be greater in competitive stressful schools as well as college campuses where dating is emphasized (Striegel-Moore et al., 1986). Moreover, as stressful and semi-closed environments, college campuses may serve to intensify the sociocultural pressures to be thin. The competitive school environment may foster academic competition as well as competition regarding the achievement of beauty (Striegel-Moore et al., 1986; Brouwers, 1988).

It is clear, however, that the environment itself is not a sufficient causal factor in eating disorders (Connor-Greene et al., 1994). Many men and women who are members of a "high risk" environment such as a college campus never develop disordered eating despite considerable pressure for thinness. This is a major challenge to the sociocultural explanation of eating disorders.

Limited research has been conducted on the relationship between perceived social climate and eating attitudes and behaviors. Connor-Greene et al. (1994) sought to expand the understanding of this relationship. Their results suggested that women who were weight preoccupied perceived their campus as placing greater emphasis on physical appearance than did normal controls. However, students' perception of involvement, social support, dependence, and competition were found to be unrelated to weight

preoccupation. The authors suggest that social support, involvement, and dependence could either encourage or inhibit disordered eating behaviors depending on the norms of the particular social group (Connor-Greene et al., 1994). Further research is needed to better understand the relationship between how one perceives their social or college climate and eating attitudes and behaviors; in particular disordered eating and weight preoccupation.

Such factors as sociocultural pressures concerning physical appearance and thinness, adherence to traditional gender role stereotypes, pressure to achieve (academic achievement pressures), body image dissatisfaction and perceived social climate are potentially amenable to some type of campus intervention (Kashubeck, Walsh, & Crowl, 1994).

Kashubeck et al. (1994) investigated whether differences in the nature of the college campus environment were related to symptoms of eating disorders. Results implied that different college campuses might have to deal with different campus environment issues related to the development and maintenance of eating disorders. Furthermore, knowledge of these specific contributing factors unique to the college campus are essential in the design and implementation of eating disorder prevention programs as well as intervention strategies. To be maximally effective, prevention programs and intervention strategies must take into account the college environment in order to be effectively tailored. Kashubeck et al. (1994) further suggest that factors related to the development or maintenance of an eating disorder on one campus may not

operate in the same way on another campus. College campuses are speculated to differ significantly in terms of attitudes and emphases.

Prevention and Treatment of Eating Disorders

Treatment

Recent studies have pointed out that less than half the subjects who develop an eating disorder reach clinical attention. Sizable delays between the onset of symptoms and treatment is common (Becker, Grinspoon, Klibanski & Herzog, 1999). Drenowski, Hopkins & Kessler (1988) suggested that the typical patient is capable of concealing their condition up to five years before seeking treatment. Often, an individual with an eating disorder will conceal symptoms because of feelings of shame, unwillingness to relinquish them, lack of knowledge regarding effect on health and ignorance of available treatment (Becker et al., 1999). Eating disorder treatment is complex, prolonged and costly and in many cases its efficacy is limited, especially when illness is prolonged (Latzer & Shatz, 1999; Santonastaso et al., 1999). It has been estimated that 50% of patients with anorexia or bulimia nervosa will have a full recovery. Whereas 30% will have a partial recovery and 20% will demonstrate no substantial improvement in symptoms (Becker et al., 1999).

Prevention

Despite the fact that a large percentage of college students are thought to be at risk of developing an eating disorder, few prevention programs directed toward such students have been reported in the literature to date (Franko, 1998). With the prevalence of eating disorders and disordered eating increasing significantly, it is essential that they be fully understood so that prevention efforts can be designed and implemented. In order

to prevent eating disorders, one must first understand what causes them and then institute programs that mitigate those causes to teach individuals how to deal with them (Wertheim, Paxton, Schultz, & Muir, 1997). Without first understanding the mutual relationship between individuals and their environment, and the forces that work on individuals in their culture in which they develop, eating behavior and attitudes toward physical build and body image cannot be understood (Latzer & Schwatz, 1999). Kashubeck et al. (1994) added, "In the planning of prevention programs and intervention strategies for those with eating disorders, we need to take into account the campus climate to tailor these strategies more effectively for maximum impact."

Summary

Eating disorders have been characterized as the presentation of extreme emotions, attitudes and behaviors surrounding weight and food issues including drive for thinness, body dissatisfaction and bulimia, social physique anxiety, dietary restraint and body mass index. The etiology of eating disorders is considered to be multi-risk or multi-faceted with gender considered as the most influential factor associated with the prevalence of an eating disorder. Eating disorders and disordered eating on college campuses are estimated to be higher than that of the general population. Developmental factors and the college environment are thought to contribute to the increased prevalence.

The treatment of an eating disorder is complex, prolonged and costly. With the prevalence of eating disorders and disordered eating increasing significantly on the college campus, it is essential that they be fully understood so that prevention efforts can be successfully designed and implemented. To increase this understanding, one must first

understand the relationship between individuals and their environments, the forces that work on individuals in their culture in which they develop and their attitude and behavior toward their weight, body shape and eating from their perception and the perception of others.

Presented in this chapter was a review of the literature including the definition of an eating disorder, the prevalence of eating disorders, limitations to the research on prevalence of eating disorders, contributing factors to the development of an eating disorder and the prevention and treatment of eating disorders.

CHAPTER 3

METHODOLOGY

The purpose of this cross-sectional study was to:

- 1) Assess the association between body mass index and drive for thinness, body dissatisfaction, and bulimia, social physique anxiety and dietary restraint.
- 2) Assess the differences between male and female college students with regard to dietary restraint, drive for thinness, body dissatisfaction and bulimia, social physique anxiety and body mass index.
- 3) Assess the association between race/ethnicity and drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint.

Included in this chapter is a description of the sample, the protection of human subjects, instrument, data collection and data analysis.

Sample and Setting

A self-selected group of students attending the University of North Texas were asked to complete a self-administered questionnaire assessing dietary restraint, drive for thinness, body dissatisfaction and bulimia, social physique anxiety and body mass index. The study population consisted of five hundred and twenty-five male and female college students enrolled in PHED 1000 (Scientific principles and practices of health-related fitness), Health 1900 (Principles of Health), PHED 1210 (Weight training), PHED 1211 (Intermediate weight training) and PHED 1160 (Self- Defense Activities) Spring Semester, 2000.

Elicited information from the self-reported questionnaire included:

- 1) Demographic data (date of birth, race/ethnicity, height, present weight and desirable body weight).
- 2) Drive for thinness, body dissatisfaction and bulimia (Garner, Olmstead & Polivy, 1983).
- 3) Dietary restraint (Herman, 1978)
- 4) Social physique anxiety (Hart, Leary, & Rejeski, 1989).

Protection of Human Subjects

Approval to conduct this study was granted by the Institutional Review Board at the University of North Texas. No risks were identified for participants who volunteered to participate in this study. All subjects who chose to participate were assured confidentiality. Confidentiality was assured by indicating to the subjects prior to the administration of the questionnaire that no names or identifying information would be recorded. Findings were reported in a group format without name identification such that individual responses could not be identified. Questionnaires have remained secured and under the control of the investigator.

Instrument

The questionnaire (appendix A) consisted of fifty-two items designed to assess dietary restraint, drive for thinness, body dissatisfaction and bulimia, social physique anxiety and body mass index (actual and desirable). Questions were derived from the scales of three instruments: The Eating Disorder Inventory (Garner et al., 1983); The Restraint Scale (Herman, 1978) and the Social Physique Anxiety Scale (Hart et al., 1989). The questionnaire concluded with demographic data including date of birth,

gender, height, present weight, desirable weight, race/ethnicity and Greek membership. Self-reported height, present body weight and desirable body weight were used to calculate actual and desirable body mass index.

The Eating Disorder Inventory (Garner et al., 1983) is a measure used to assess psychological characteristics and symptoms common to anorexia and bulimia nervosa. The Eating Disorder Inventory is comprised of sixty-four questions that form eight scales. However, for the purposes of this study only three of the scales were used to assess attitudes and behaviors toward weight, body shape and eating. The scales are:

- 1) Drive for thinness: This scale consisted of seven items designed to indicate an excessive concern with dieting, preoccupation with weight and entrenchment in an extreme pursuit of thinness. Scale items reflect both an ardent wish to lose weight as well as a fear of weight gain (Garner et al., 1983).
- 2) Bulimia: This scale consisted of seven items designed to indicate a tendency toward episodes of uncontrollable overeating that may be followed by the impulse to engage in self-induced vomiting (Garner et al., 1983).
- 3) Body Dissatisfaction: This scale consisted of nine items designed to reflect the belief that specific parts of the body associated with shape and change or increased "fatness" at puberty are too large (Garner et al., 1983).

Subjects responded to a six-point forced choice item scale by rating whether each item applies "always", "usually", "often", "sometimes", "rarely" or "never". The most extreme anorexic response ("always" or "never" depending on the keyed direction) was given a score of "3". The immediately adjacent response received a score of "2". The

next response received a score of “1”. The three choices opposite of the most extreme anorexic response received a score of “0”. Scale scores were the summation of all item scores for that scale. Norms have been published for eating disorder patients and non-clinical college students (Garner et al., 1983). Three-week test-retest reliabilities on a sample of 70 non-clinical subjects were above .81 (Williamson, Anderson, Jackman & Jackson, 1995). The bulimia scale has been shown to be a stable predictor of the presence of binge eating at one-year and two-year follow ups (Williamson, Anderson, Jackman & Jackson, 1995). Drive for thinness, bulimia and body dissatisfaction has been found to be highly correlated with other measures that assess eating and dieting behaviors (Garner et al., 1983).

The dietary restraint scale (Herman, 1978) is a ten-item self-report questionnaire assessing weight fluctuations, degrees of chronic dieting and related attitudes toward weight and eating. Answers are based on a three- and four-point Likert scale, as well as, a four-point ordinal scale. Numerical values of zero to three and zero to four are assigned accordingly. Numerical values are summed to produce a total score of zero to thirty-five. Related norms have been reported in the literature (Gorman & Allison, 1995). The median dietary restraint score for males and females have been approximated to be twelve and sixteen, respectively. Test-retest reliability has been demonstrated in the literature ($r = .92$ to $.95$) (Gorman & Allison, 1995). Restraint scale scores have been associated to different patterns of eating (Gorman & Allison, 1995).

The social physique anxiety scale (Hart et al., 1989) is a twelve-item self-report inventory designed to measure levels of social physique anxiety. Social physique anxiety

is defined as a "subtype of social anxiety that occurs as a result of the prospect or presence of interpersonal evaluation involving one's physique" (Hart et al., 1989).

Subjects were asked to indicate the degree to which each of the twelve-item statements is characteristic or true of themselves. Answers were based on a five-point Likert-type scale with numerical values of one to five assigned accordingly. Statement items number one, two, five and eleven were reversed keyed. Numerical values were summed to produce a total score ranging from twelve (low social physique anxiety) to sixty (high social physique anxiety). Mean and standard deviations for male and female undergraduate students have been reported (Hart et al., 1989; Cox, Lantz & Mayhew, 1997). Eight-week test-retest demonstrated acceptable reliability ($r = .82$). Hart et al. (1989) demonstrated construct validity through moderate correlations with measures that include fear of negative evaluation ($r = .35$) and body cathexis ($r = .51$). Furthermore, Petrie, Diehl, Rogers and Johnson (1996) demonstrated construct validity and reliability in undergraduate female and male students.

A pilot test was conducted to detect unclear directions, ambiguously worded questions, and potential problems in the administering the questionnaire. Fifty-one students enrolled in Health 4100 (Epidemiology of communicable and non-communicable disease) participated in the pilot study. Administration and completion of the self-reported questionnaire was estimated to be ten to fifteen minutes including the collection of the consent form. Questionnaire directions, as well, as questions/statements were determined to be clear and easy to understand with the exception of question twelve and thirteen (Section One), which were identified as being the same.

Comments/suggestions included: “Everything was clear and easy to answer”; “All of the questions were very straight forward, very easy to take and understand”; “I think it is very thorough and easy to understand; "The questions don't seem too personal or invasive”; “Some questions were too personal. This may prevent people from answering or being honest”. Based on recommendations from the pilot study, the self-reported questionnaire was adjusted accordingly.

Data Collection

Data was collected from the administration of a fifty-two item self-reported questionnaire to male and female college students at the University of North Texas, Spring, 2000. Data collection times were prearranged with each course instructor. At the time of subject recruitment, subjects were asked to voluntarily participate in a scientific investigation designed to assess a variety of attitudes and behaviors toward weight, body shape and eating. All subjects volunteering to participate completed a consent form (Appendix B) documenting their agreement to participate. Informed consent advised the participant of the purpose, their part in the investigation, as well as, the possible benefits and risks to be expected from their participation in the scientific investigation. All participants were informed that their participation is voluntary, all responses will be confidential and no identifying information will be recorded. Furthermore, all participants were informed that they could discontinue their participation at any time without discrimination or loss of benefit to themselves. The investigator was present at the time of consent and was available to answer any questions. All subjects were provided with

information on how to contact the investigator in the instance that they had questions regarding their participation after consent has been granted (Appendix B).

After the scientific investigation was adequately explained and informed consent obtained and collected, questionnaires were administered. Subjects were asked to complete the questionnaire. The investigator collected all completed questionnaires. Total collection time including consent and questionnaire administration was approximately twenty minutes.

Data Analysis

Data was analyzed using the Statistical Package of the Social Sciences (SPSS 10.0). Descriptive statistics were used to describe age, race/ethnic background, body mass index (actual and desirable), and weight perception for male and female subjects. Analysis of variance was performed to identify statistical differences between actual body mass index and drive for thinness, body dissatisfaction and bulimia, dietary restraint and social physique anxiety for the entire sample, as well as, for male and female college students. A two-tailed t-test was used to determine the difference between male and female college students with regard to drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint. Analysis of variance (ANOVA) was performed to identify statistical differences between race/ethnicity and drive for thinness, body dissatisfaction and bulimia, dietary restraint and social physique anxiety. A Student-Newman-Keuls post hoc test was performed to determine difference between group means categorized by body mass index.

The level of significance for all tests was $p \leq .05$.

Summary

A cross-sectional study design was used to investigate the relationship between dietary restraint, attitudes and behaviors toward weight, body shape and eating, social physique anxiety, race/ethnicity and body mass index in male and female college students the University of North Texas. Data was collected from a fifty-two item self-report questionnaire. The data analyzed consisted of demographic information, dietary restraint, drive for thinness, body dissatisfaction and bulimia, social physique anxiety and body mass index (actual and desirable). Descriptive statistics were used to describe the sample. Two-tailed t-test, analysis of variance (ANOVA) and a Student Newman-Keuls post hoc test were used to answer the research questions. The level of statistical significance was $p \leq .05$ for all tests.

CHAPTER 4

RESULTS

The purpose of this cross-sectional study was to:

1. Assess the association between body mass index and drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint.
2. Assess the difference between male and female college students with regard to drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint.
3. Assess the association between race/ethnicity and drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint.

Included in this chapter is a description of the sample and research findings.

Description of Sample

Participants included male and female undergraduate college students at the University of North Texas. Data was analyzed for five hundred twenty-five participants. Complete data was not available for all analysis due to participant response.

Of the five hundred twenty-five participants, 47.2% of the sample was male (n=248). The remainder of the sample were female (n=277; 52.8%). The mean age of the respondents was 22.21 years \pm 3.98. Ethnic distribution was 64.0% Caucasian/White (n=336), 19.0% African American/Black (n=100), 8.2% Latino/Hispanic (n=43); 5.5% Asian/Pacific Islander (n=29) and 3.2% other including Native American/American Indian (n=17).

Body Mass Index (BMI), Desired Body Weight and Weight Perceptions

Self-reported heights and weights were used to calculate the actual and desirable body mass index for each subject. The mean actual BMI for all subjects was 24.03 ± 4.18 (Table One), whereas the mean desired BMI was 22.76 ± 3.34 (Table One). The majority of both males and females were categorized as "normal weight" ($n=317$; 60.7%). Subjects were asked to describe their current perceived weight status according to four categories "underweight," "normal weight," "overweight," and "obese." Table One compares self-perceived body weight to actual and desired body weight in male and female undergraduate college students. Males and females differed in their accuracy of their weight perceptions.

In general, the percentage of male subjects' in each weight category based on actual body mass index was similar to their self-perceived weight. However, 14.1% of men perceived themselves as underweight, whereas only 2.8% were classified as underweight. Results suggest that males desirable body weight was similar to their actual body weight (Table One).

Unlike males, female subjects' perceived themselves as being heavier than classified according to their actual body weight. For example, 39% of female subjects perceived themselves as overweight in spite of only 16.7% of female subjects classified as overweight. Similarly, females' desirable body mass index differed from their actual body mass index. Results suggest that 12.9% of females desired to be "underweight", whereas only 6.2% were considered "underweight".

Table One

Comparison of Actual and Desirable Body Mass Index vs. Self-Perceived body weight in Male and Female College Students

Variable	Men	Women	Total
	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)
Participants	248 (47.2%)	277 (52.8%)	525 (100%)
A-BMI (underweight ¹)	7 (2.8%)	17 (6.2%)	24 (4.6%)
A-BMI (normal weight ²)	119 (48.2%)	198 (72.0%)	317 (60.7%)
A-BMI (overweight ³)	87 (35.2%)	46 (16.7%)	133 (25.5%)
A-BMI (obese ⁴)	34 (13.8%)	14 (5.1%)	48 (9.2%)
D-BMI (underweight)	4 (1.6%)	35 (12.9%)	39 (7.6%)
D-BMI (normal weight)	121 (49.6%)	226 (83.1%)	347 (67.2%)
D-BMI (overweight)	105 (43.0%)	9 (3.2%)	114 (22.1%)
D-BMI (obese)	14 (5.7%)	2 (<1%)	16 (3.1%)
Perceived (underweight)	35 (14.1%)	11 (4.0%)	46 (8.8%)
Perceived (normal weight)	136 (54.8%)	149 (53.8%)	285 (63.0%)
Perceived (overweight)	71 (28.6%)	108 (39.0%)	179 (34.1%)
Perceived (obese)	6 (2.4%)	8 (2.9%)	14 (2.7%)

*A-BMI = Actual Body Mass Index **D-BMI = Desirable Body Mass Index

¹ = BMI<18.5 ² =BMI 18.51-24.99 ³ =BMI 25.0-29.99 ⁴ =BMI>30.0

Is Body Mass Index Associated with Established Correlates of Disordered Eating Including Drive for Thinness, Body Dissatisfaction, and Bulimia, Social Physique Anxiety and Dietary Restraint?

Total Sample

Descriptive statistics for the variables of interest including drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint are presented in Table Two. In order to determine the association between these variables and actual body mass index-categorized, one-way analysis of variance was performed. Results of the analysis are found in Table Three. The results of this analysis indicated that a significant difference between group means did exist for all variables of interest except for the bulimia [$F(3,513) = 1.161, p > .05$] and drive for thinness [$F(3,508) = 2.159, p > .05$].

To determine which means were statistically significant, a Student-Newman-Keuls post hoc test was performed. Results are presented in Appendix C.

Significantly, mean scores on social physique anxiety were shown to differ between normal weight subjects and obese subjects ($p < .05$). In general, as body mass index increased, social physique anxiety score increased suggesting greater anxiety toward appearance as perceived by others. In spite of no significant difference ($p = .208$), underweight subjects had a slightly higher mean score than subjects considered normal weight. This suggests that underweight subjects have greater anxiety toward the interpersonal evaluation of their physique than subjects classified as having a normal

weight. Mean scores did not vary significantly for subjects considered underweight, overweight and obese ($p = .175$).

Similarly, mean scores on body dissatisfaction* and dietary restraint** increased as body mass index increased. Mean scores for subjects considered underweight and normal weight did not differ significantly ($p = .174^*$; $p = .072^{**}$). Nor did mean scores for overweight and obese subjects ($p = .182^*$; $p = .353^{**}$). However, underweight and normal weight subjects differed significantly from subjects considered overweight and obese ($p < .05$; Appendix C).

Table Two

Mean (M) and Standard Deviations (SD) of variable scores categorized by actual body mass index category for male and female college students

Variable	Men	Women	Total
	M(SD)	M(SD)	M(SD)
Social Physique Anxiety (Total)	29.97 (8.46)	36.83 (8.94)	33.56 (9.35)
Underweight	34.43 (6.70)	33.41 ((8.08)	33.71 (7.64)
Normal weight	26.92 (7.37)	35.55 (8.90)	32.30 (9.34)
Overweight	31.61 (8.43)	42.61 (7.50)	35.31 (9.63)
Obese	35.42 (8.34)	40.29 (6.17)	36.87 (8.01)
Bulimia (Total)	0.66 (1.55)	0.81 (1.89)	0.74 (1.74)
Underweight	0.14 (0.38)	0.76 (1.39)	0.58 (1.21)
Normal weight	0.68 (1.45)	0.86 (2.06)	0.79 (1.85)
Overweight	0.60 (1.47)	0.42 (0.94)	0.54 (1.32)
Obese	0.88 (2.13)	1.35 (2.24)	1.02 (2.15)
Body Dissatisfaction (Total)	5.25 (5.82)	10.77 (7.52)	8.18 (7.31)
Underweight	1.57 (2.44)	6.82 (4.75)	5.29 (4.81)
Normal weight	2.74 (4.19)	9.79 (7.34)	7.16 (7.21)
Overweight	6.92 (5.68)	15.39 (7.14)	9.92 (7.43)
Obese	10.78 (6.44)	14.15 (6.91)	11.76 (6.69)

Drive for Thinness (Total)	4.39 (3.70)	7.22 (5.33)	5.87 (4.83)
Underweight	2.29 (0.76)	5.47 (5.15)	4.54 (4.56)
Normal weight	3.50 (2.87)	6.85 (5.31)	5.58 (4.82)
Overweight	4.97 (3.96)	9.46 (5.14)	6.52 (4.87)
Obese	6.42 (4.84)	7.07 (4.76)	6.62 (4.77)
Dietary Restraint (Total)	9.35 (5.94)	13.22 (5.84)	11.41 (6.19)
Underweight	4.86 (3.48)	10.00 (7.06)	8.43 (6.57)
Normal weight	6.83 (5.00)	12.73 (5.79)	10.56 (6.20)
Overweight	11.36 (5.74)	16.26 (4.73)	13.06 (5.88)
Obese	14.06 (4.98)	14.38 (4.37)	14.16 (4.77)

Male Undergraduate Students

Descriptive statistics for the variables of interest including drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint for male undergraduate students are presented in Table Two. In order to determine the association between these variables and actual body mass index-categorized, one-way analysis of variance was performed. Results of the analysis are found in Table Three. Results indicate that a significant difference between group means did exist for all variables of interest except for bulimia [$F(3,241)=.542$; $p>.05$].

To determine which means were significantly different, a Student-Newman-Keuls post hoc test was performed. Results are presented in Appendix C.

Mean scores for social physique anxiety were shown to differ significantly between male subjects categorized as normal weight and male subjects considered underweight and obese ($p < .05$). Normal weight and overweight ($p = .056$) as well as overweight, underweight and obese group ($p = .265$) means were not statistically significant. Results suggest that male subjects feel less anxiety as body weight ranges from normal to overweight.

Similarly, mean scores for body dissatisfaction, drive for thinness and dietary restraint, increased as BMI increased. Mean scores for body dissatisfaction did not differ significantly between underweight and normal weight subjects ($p = .459$). However, mean variable scores for overweight subjects differed significantly from underweight and normal weight subjects ($p < .05$) as well as subjects considered obese ($p < .05$).

A significant difference ($p < .05$) in drive for thinness mean scores was reported between underweight and subjects considered overweight and obese. Underweight and normal weight subjects did not differ significantly ($p = .271$), nor did subjects considered normal and overweight ($p = .187$) as well as overweight and obese subjects ($p = .188$).

Finally, mean dietary restraint scores for male subjects considered underweight and normal weight did not differ significantly ($p = .228$). Nor did mean scores for overweight and obese male subjects ($p = .099$). Results did indicate a significant difference ($p < .05$) between underweight and normal weight subjects and subjects considered overweight and obese.

Female Undergraduate Students

Descriptive statistics for the variables of interest including drive for thinness, body dissatisfaction and bulimia and social physique anxiety and dietary restraint for female undergraduate students are presented in Table Two. In order to determine the association between these variables and actual body mass index-categorized, one-way analysis of variance was performed. Results of the analysis are found in Table Three. Analysis results indicate a significant difference between group means for all variables except bulimia [$F(3,268)=1.06$; $p=.366$].

To determine which means were significantly different, a Student-Newman-Keuls post hoc test was performed. Results are found in Appendix C.

In general, mean scores for all variables increased as body mass index increased. However, mean scores for female subjects considered obese were insignificantly ($p > .05$) lower than subjects considered overweight. Higher scores are indicative of more severe pathology.

For the variables social physique anxiety* and body dissatisfaction** difference in mean scores were significantly similar. Female subjects considered underweight and normal weight did not differ significantly ($p = .372^*$; $p = .146^{**}$). Nor did obese and overweight subjects ($p = .331^*$; $p = .545^{**}$). However, results indicate the mean scores for underweight and normal weight subjects were significantly different from scores reported by obese and overweight subjects ($p < .05$; Appendix C).

The only significant difference for the variable drive for thinness was demonstrated between underweight subjects and subjects considered overweight ($p < .05$). All other groups were found to be statistically insignificant ($p = .180$; Appendix B).

Finally, alike all other groups, as BMI increased, dietary restraint increased. Statistical significance in mean dietary restraint score was found between underweight subjects and subjects classified as obese or overweight ($p < .05$). All other groups were insignificantly different ($p = .079$; Appendix C)

Is there a difference between male and female college students with regards to dietary restraint, drive for thinness, body dissatisfaction, bulimia, and social physique anxiety?

Descriptive statistics for the variables of interest including drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint are presented in Table Two. In order to determine the difference between male and female undergraduate college students with regard to the variables of interest, a 2-tailed t-test was performed. Results are found in Table Four.

Results of this analysis indicate that male and female undergraduate college student mean scores for all variables except bulimia [$(t, 518) = -.924$; $p = .356$] differ significantly. In general, females reported greater social physique anxiety, body dissatisfaction, drive for thinness as well as dietary restraint. However, present data suggest, men, alike women demonstrate a greater risk toward disordered eating as body mass increases.

Is Race/Ethnicity Associated with Drive for Thinness, Body Dissatisfaction and Bulimia, Social Physique Anxiety and Dietary Restraint?

Descriptive statistics for the variables of interest including drive for thinness, body dissatisfaction and bulimia, social physique anxiety and dietary restraint are present in Table Five. In order to determine the association, if any, between these variables and race/ethnicity, one-way analysis of variance was performed. Results of this analysis are found in Table Six. Results indicate that a statistically insignificant difference exists between race/ethnicity and the variables of interest except for dietary restraint [$F(4,495)=6.94$; $p=.000$] and social physique anxiety [$F=(4,508)=4.33$; $p=.002$]. For the variable dietary restraint, a Student-Newman-Keuls post hoc test suggested that students categorized as "other" is significantly different than Caucasians/Whites (Appendix C). For the variable, social physique anxiety, a Student Newman-Keuls post-hoc test suggested that there is no difference between group means (Appendix C).

Summary

Subjects for this investigation included five hundred twenty-five male (47.2%) and female (52.8%) undergraduate college students. Mean age was 22.21 years and a variety of race/ ethnicity groups were sampled including African American/Black (19.0%), Caucasian/White (64.0%), Latino/Hispanic (8.2%) and Asian/Pacific Islander (5.5%). In general, results for this investigation suggest that as actual body mass index increased mean scores on established correlates of disordered eating increased for both males and females. A two-tailed t-test suggested that males and females significantly differed in regards to drive for thinness, body dissatisfaction, social physique anxiety and

dietary restraint. Finally, analysis of variance results indicated that there is no association between race/ethnicity and established correlates of disordered eating.

Table Three

ANOVA Scores: Is body mass index associated with established correlates of disordered eating in male and female college students?

	SPA	Bul	BD	DT	DR
Male:					
N	242	244	238	243	231
F (df=3)	13.02	0.542	26.49	7.57	22.92
Sig.	.000	.654	.000	.000	.000
Female:					
N	266	271	270	267	264
F (df=3)	9.88	1.06	10.28	3.73	6.52
Sig.	.000	.366	.000	.012	.000
Total:					
N	510	517	510	512	497
F (df=3)	5.49	1.161	9.76	2.16	10.09
Sig.	.001	.324	.000	.092	.000

SPA = social physique anxiety

Bul = Bulimia

BD = Body Dissatisfaction

DT = Drive for thinness

DR = Dietary Restraint

Table Four

Two-tailed t-test to determine difference between male and female undergraduate college students regarding established correlates of disordered eating.

Variable	N	t	p-value
Social Physique Anxiety	511	-8.71	.000
Bulimia	518	-.924	.356
Body Dissatisfaction	511	-9.13	.000
Drive for Thinness	513	-6.98	.000
Dietary Restraint	498	-7.34	.000

Table Five

Mean (M) and Standard Deviation (SD) of variable scores categorized by race/ethnicity

Variable	N	M	SD
Social Physique Anxiety	513	33.50	9.37
AA*/Black	98	30.77	9.31
Caucasian/White	330	34.67	9.49
Latino/Hispanic	39	31.92	8.38
Asian/Pacific Islander	29	33.66	6.37
Other**	17	30.06	9.97
Bulimia	520	.733	1.73
AA/Black	100	.460	.979
Caucasian/White	333	.850	1.97
Latino/Hispanic	41	.488	1.05
Asian/Pacific Islander	29	.517	.950
Other	17	1.00	2.47
Body Dissatisfaction	513	8.15	7.30
AA/Black	35	6.93	6.77
Caucasian/White	329	8.76	7.43
Latino/Hispanic	43	7.98	7.71
Asian/Pacific Islander	29	7.62	7.44
Other	17	4.53	4.70

Drive for Thinness	515	5.87	4.83
AA/Black	97	5.52	4.76
Caucasian/White	329	6.14	4.97
Latino/Hispanic	43	5.91	4.75
Asian/Pacific Islander	29	5.31	4.24
Other	17	3.47	2.65
Dietary Restraint	500	11.38	6.20
AA/Black	93	9.29	6.12
Caucasian/White	323	12.41	6.18
Latino/Hispanic	40	10.25	5.51
Asian/Pacific Islander	28	10.00	5.06
Other	16	8.13	6.20

*AA= African American

**Other -includes Native American/American Indian

Table Six

ANOVA Scores: Is race/ethnicity associated with established correlates of disordered eating?

Variable	N	df	F	P-value
Social Physique Anxiety	512	4	4.33	.002
Bulimia	519	4	1.42	.226
Body Dissatisfaction	512	4	2.36	.052
Drive for Thinness	514	4	1.54	.190
Dietary Restraint	499	4	6.94	.000

CHAPTER 5

DISCUSSION

Body Mass Index, Desired Body Weight and Weight Perception

Studies investigating gender differences in body image consistently show that men and women differ in perception of and dissatisfaction with their bodies (Connor-Greene, 1988; Rolls, Fedoroff & Guthrie, 1991; Anderson & Holman, 1997). There is some evidence that gender differences exist not only in importance attached to weight and shape but also in what is perceived as "ideal". Whereas women tend to overestimate their body size, men are less critical of their bodies and in general, perceive both their size and shape as normal (Hart, Leary & Rejeski, 1989). Dissatisfaction with body weight is a well-known risk factor leading to disordered attitudes and behaviors toward weight, body shape and eating.

The present data suggest an incongruity between male and female self-perceived body weight and their actual weight category (Table One); however male subjects demonstrate a more accurate perception of their current body weight than female subjects. Results suggest that females failed to see themselves as underweight when they were, perceived themselves as overweight when they were not, and many of those who considered themselves normal weight still desired to be thinner. Whereas men perceived themselves as underweight when they were not and wanted to be heavier. Consistent with previous findings, these results suggest that a greater percentage of college females perceive themselves as overweight or obese than actually are overweight or obese (Wong & Huang, 1999; Siacca, Melby, Hyner, Brown & Femea, 1991; Haberman & Luffey,

1998; Heatherton, Nichols, Mahamedi & Keel, 1995). Additionally, research supports the finding that males are more likely to perceive themselves as underweight and want to be heavier (Wong, Chen, Chan, Wang & Yamamoto, 1999). The divergence in actual versus perceived body weight is partially explained by the cultural ideal for body shape in that women are to be slender and men strong, athletic and muscular.

The discrepancy between women's actual body weight, their self-perceived body weight and their desired body weight reflects an unrealistic view of the "ideal" female body. This may encourage the development of disordered attitudes and behaviors toward weight, body shape and eating which can have serious physical and psychological consequences. The discrepancy between men's actual body weight and their perceived weight remains ambiguous. However, it has been hypothesized that unlike women who tend to perceive themselves as larger than they actually are, some men perceive themselves to be smaller than they actually are (Taylor, 1985). This phenomenon has been referred to as "bigamerexia" (Taylor; Schwerin, Corcoran, Fisher, Patterson, Askew, Olrich & Shanks, 1996). Limited research exists regarding the prevalence of disordered eating among males and it remains unclear whether risk factors specified for women including body dissatisfaction and drive for thinness are applicable to men.

Males vs. Females

Results of this study indicate that a similar pattern of attitudes and behaviors toward weight, body shape and eating is similar, yet significantly different in male and female college students. This pattern seems to be, in general, as body mass index increases negative attitudes and behaviors toward weight, body shape and eating increase

as indicated by drive for thinness, body dissatisfaction and dietary restraint. Females differ from males in that they reported higher mean scores on all variables including drive for thinness, body dissatisfaction, dietary restraint and social physique anxiety. Although the risk of disordered eating may be similar between male and female subjects, females appear to be more prone to the development of this pattern. However, in spite of the fact that women are considered at greater risk for disordered eating, men should not be neglected. Additional research is needed to determine why men differ from women and how this difference supports and/or protects against the progression towards disordered eating.

Most interesting was the relationship between social physique anxiety and body mass index in male college students. Research has suggested that individuals with a greater body mass index report greater social physique anxiety (Hart et al., 1989). Social physique anxiety is anxiety that people experience in response to other evaluations of their physiques. It is a subtype of social anxiety that occurs as a result of the prospect or presence of interpersonal evaluation involving ones physique (body form and structure, specially body fat, muscle tone and general body proportions). Present data for females, as well as, additional findings (Hart et al., 1989; Diehl, Johnson, Rogers & Petrie, 1998; Cox, Lantz & Mayhew, 1997) and general sociocultural theory (Stice, 1994) supports this finding, however an incongruity in data was found for male subjects. Interestingly, underweight and obese male subjects reported the greatest physique anxiety scores, whereas normal weight subjects scored significantly lower. The higher the score, the

greater the anxiety that one experiences in response to others evaluation of their physique.

Several factors may contribute to the understanding of these results. It is plausible that because men desire to be heavier but not obese, they exhibit greater social physique anxiety similar to individuals who exhibit greater anxiety because of the desire to be thinner.

Obesity is a highly stigmatized condition. Society values attractiveness and thinness, leading to a continual shift toward a thinner standard for body weight (Stice, 1994; Garner, Garfinkel, Schwartz & Thompson, 1980; Rolls et al., 1991). Whereas, women appear to be more concerned with aspects of their appearance, particularly their weight, men are more likely to report that if they are fit and exercise they feel positive about their bodies. The desire to be "fit" may reflect the desire to be "heavier" or the "drive for bulk". However "fit" or "bulk" is not congruent with "obese". The "drive for bulk" has been described as the desire to gain muscle, fear of gaining fat and losing weight (Schwerin et al., 1996).

Theorists have hypothesized that social physique anxiety may lead to the avoidance of situations in which the body is on display reducing the likelihood of involvement in healthy exercise programs in an effort to deal with high levels of body dissatisfaction (Hart et al., 1989). Dissatisfaction with one's physique is a primary motivator for exercise behavior. Therefore high social physique anxiety may deter an individual from participating in an exercise program (Hart et al., 1989). Because of the importance of social physique anxiety to fitness-related perceptions and specific exercise

behavior, the understanding, prevention and treatment of bodily anxieties including social physique anxiety is essential.

Race/Ethnicity

Most disappointing was the finding suggesting race/ethnicity was not associated with attitudes and behaviors toward weight, body shape and eating.

Historically, research has suggested that eating disorders were characterized as Caucasian, female and affluent. Today there has been increasing evidence supporting the theory that eating disorders affect a wider range of individuals across race, gender and socioeconomic status (Pike & Walsh, 1996). Despite being statistically non-significant, present data suggest that "Caucasians/Whites" generally tended to score more pathologically than other "race/ethnicity" groups including African American/Blacks, Asian/Pacific Islanders, and Hispanic/Latino's. These non-significant trends suggest that Caucasian students may exhibit more eating disordered behaviors than other students in general. The lack of statistical support may have resulted from several factors. First the results may simply indicate that Caucasian students are not more prone to develop more pathological eating behavior. The difference between group means may not have reached statistical significance because of small sample size for some race/ethnic groups sampled. Perhaps with a larger, more diverse sample the relationship between race/ethnicity and correlates of disordered eating may have been more pronounced and reached statistical significance. Another possibility is that diversity at the University of North Texas is not representative of universities in general. Examination of attitudes and behaviors toward

weight, body shape and eating at a variety of campuses would be useful in determining this.

Conclusion

Eating disorders have become a widespread problem on college campuses today. Despite the fact that many researchers have stressed the importance of developing programs that aim at reducing risk factors, few programs directed toward such students have been reported. Knowledge of risk factors is a necessary prerequisite for primary and secondary prevention. Additionally, for prevention efforts to be effective, intervention strategies need to be targeted at factors that are related to the development and maintenance of disordered attitudes and behaviors toward weight, body shape and eating specific to "targeted" campuses and its "subgroups". This study sought to add to this knowledge regarding risk factors, specifically related to males and females at a large southwestern university. It is the author's hypothesis that intervention programs aimed at minimizing weight concern (body dissatisfaction, drive for thinness and social physique anxiety), as well as, emphasizing self-acceptance, sensible "good enough" nutrition, exercise and health maybe an effective strategy in the prevention of disordered eating in male and female college students. Although findings cannot be generalized to all college populations, similar surveys could be conducted to determine baseline data for individual campuses. Further research is needed to understand risk factors specific to individuals of differing race/ethnic backgrounds as well as undergraduate male college students.

APPENDIX A
QUESTIONNAIRE

Dear Study Participant:

Thank you for volunteering to participate in this scientific investigation. The following questionnaire has been designed to measure a variety of attitudes and behaviors toward weight, body shape and eating. THERE IS NO RIGHT OR WRONG ANSWER. Please be honest in your answers. Results will remain confidential.

The questionnaire is composed of 52 questions. Your total participation time is estimated to be approximately 10 minutes.

If, at any time, you have questions regarding your participation, please contact my faculty advisor or myself.

Your willingness to participate is greatly appreciated.

Sincerely,

Stacy Lofton, RD, LD

Contact Information:

Investigator:

Stacy Lofton, RD, LD

Graduate Student

Department of Kinesiology, Health Promotion and Recreation

University of North Texas

(214) 820-7555

Email: stacyl@baylordallas.edu

Faculty Advisor:

Tim Bungum, DrPH

Assistant Professor

Department of Kinesiology, Health Promotion and Recreation

University of North Texas

(940) 565-2546

Email: bungum@coefs.coe.unt.edu

SECTION ONE:

Read each statement carefully. Circle the number that BEST describes your response to the statement. There is no RIGHT or WRONG answer. Results are completely confidential.

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

Statement:	Always	Usually	Often	Sometimes	Rarely	Never
1. I eat when I am upset.	1	2	3	4	5	6
2. I stuff myself with food.	1	2	3	4	5	6
3. I have gone on eating binges where I have felt that I could not stop.	1	2	3	4	5	6
4. I think about bingeing (overeating).	1	2	3	4	5	6
5. I eat moderately in front of others and stuff myself when they are gone.	1	2	3	4	5	6
6. I have the thought of trying to vomit in order to lose weight.	1	2	3	4	5	6
7. I eat or drink in secrecy.	1	2	3	4	5	6
8. I think that my stomach is too big.	1	2	3	4	5	6
9. I think that my thighs are too large.	1	2	3	4	5	6
10. I think that my stomach is the right size.	1	2	3	4	5	6
11. I feel satisfied with the shape of my body.	1	2	3	4	5	6
12. I like the shape of my buttocks.	1	2	3	4	5	6
13. I think that my hips are too big.	1	2	3	4	5	6
14. I think that my thighs are just the right size.	1	2	3	4	5	6

Statement:	Always	Usually	Often	Sometimes	Rarely	Never
15. I think that my hips are just the right size.	1	2	3	4	5	6
16. I eat sweets and carbohydrates without feeling nervous.	1	2	3	4	5	6
17. I think about dieting.	1	2	3	4	5	6
18. I feel extremely guilty after overeating.	1	2	3	4	5	6
19. I am terrified of gaining weight.	1	2	3	4	5	6
20. I exaggerate or magnify the importance of weight.	1	2	3	4	5	6
21. I am preoccupied with the desire to be thinner.	1	2	3	4	5	6
22. If I gain a pound, I would worry that I will keep gaining.	1	2	3	4	5	6

SECTION TWO:

Read each statement carefully. Circle the number that BEST describes the degree to which the statement is characteristic or true of you. There is no RIGHT or WRONG answer. Results are completely confidential.

- 1) Not At All
- 2) Slightly
- 3) Moderately
- 4) Very
- 5) Extremely

Statement:	Not At All	Slightly	Moderately	Very	Extremely
1. I am comfortable with the appearance of my physique/figure.	1	2	3	4	5
2. I worry about wearing clothes that might make me look too thin or overweight.	1	2	3	4	5

Statement:	Not At All	Slightly	Moderately	Very	Extremely
3. There are times when I am bothered by thoughts that other people are evaluating my weight and muscular development negatively.	1	2	3	4	5
4. When I look in the mirror, I feel good about my physique/figure.	1	2	3	4	5
5. Unattractive features of my physique/figure make me nervous in certain social settings.	1	2	3	4	5
6. In the presence of others, I feel apprehensive about my physique/figure.	1	2	3	4	5
7. I am comfortable with how my body appears to others.	1	2	3	4	5
8. It would make me feel uncomfortable to know others were evaluating my physique/figure.	1	2	3	4	5
9. When it comes to displaying my physique/figure to others, I am a shy person.	1	2	3	4	5
10. I usually feel relaxed when it is obvious that others are looking at my physique/figure	1	2	3	4	5
11. When in a bathing suit, I often feel nervous about the shape of my body.	1	2	3	4	5

SECTION THREE:

Read each statement carefully. Circle the answer that BEST describes your response to the statement. There is no RIGHT or WRONG answer. Results are completely confidential.

1. How often are you dieting?	Never	Rarely	Sometimes	Often	Always
2. What is the maximum amount of weight that you have intentionally lost within one month?	0-4 (lbs.)	5-9 (lbs.)	10-14 (lbs.)	15-19 (lbs.)	20+ (lbs.)
3. What is your maximum weight gain within one week?	0-1(lbs.)	1.1-2 (lbs.)	2.1-3 (lbs.)	3.1-5 (lbs.)	5.1+ (lbs.)
4. In a typical week, how much does your weight fluctuate?	0-1(lbs.)	1.1-2 (lbs.)	2.1-3 (lbs.)	3.1-5 (lbs.)	5.1+ (lbs.)
5. Would a weight fluctuation of 5 pounds affect the way you live your life?	Not At All	Slightly	Moderately	Very Much	----
6. Do you eat sensibly in front of others and splurge alone?	Never	Rarely	Often	Always	----
7. Do you give too much time and thought to food?	Never	Rarely	Often	Always	----
8. Do you have feelings of guilt after overeating?	Never	Rarely	Often	Always	----
9. How conscious are you of what you are eating?	Not At All	Slightly	Moderately	Extremely	----
10. How many pounds over your desired weight were you at your maximum weight?	0-1 (lbs.)	1-5 (lbs.)	6-10 (lbs.)	11-20 (lbs.)	21+ (lbs.)

SECTION FOUR:

Please answer the following questions to the best of your knowledge. Results are completely confidential.

1. **Which of the following categories best describes your racial or ethnic identification?** *(Circle ONE answer, only.)*
 - a) African American/Black
 - b) Caucasian/White
 - c) Latino/Hispanic
 - d) Native American (American Indian, Eskimo, Aleut)
 - e) Asian or Pacific Islander
 - f) Other

2. **Mark the appropriate box:** Male Female

3. **What is your Date of Birth:** _____Month _____Year

4. **Height:** _____ **Present Weight:** _____ (lbs.)

5. **Circle the answer that best describes your present body weight:** *(Circle ONE answer, only)*
 - a) Underweight
 - b) Normal (ideal) weight
 - c) Overweight
 - d) Obese

6. **What do you consider your desirable body weight to be?** _____ (lbs.)

7. **Are you currently a member of the University of North Texas Greek System (sorority or fraternity)?** Yes No

THANK YOU FOR YOUR PARTICIPATION.

APPENDIX B
CONSENT FORM

USE OF HUMAN SUBJECTS
INFORMED CONSENT

This is to certify that I, _____, agree to participate as a volunteer in a scientific investigation as part of the Department of Health Promotion and Kinesiology at the University of North Texas under the supervision of Stacy Lofton, RD, LD and Tim Bungum, DrPH.

The purpose of the investigation and my part in the investigation has been clearly defined and fully explained to me by Stacy Lofton. I fully understand her explanation. I understand the possible benefits to be expected from my participation in this investigation. I understand that my total participation in this scientific investigations is estimated to be 20 minutes.

I have been advised that the research in which I will be participating does not involve any foreseeable health risks or discomfort.

I have been given an opportunity to ask whatever questions I have had, and all such questions have been answered appropriately. I have been informed that any questions I have concerning the research study or my participation after my consent will be answered by Stacy Lofton or Tim Bungum. I have been provided with information regarding how to contact Ms. Lofton and/or Dr. Bungum, if needed.

I understand that I am free to deny any answers to specific items or questions on the questionnaire. Furthermore, I understand that I can withdraw my consent and discontinue my participation in this investigation at any time without discrimination, prejudice or penalty.

I understand that all data collected will remain completely confidential and no identifying information regarding my identity will be recorded.

I have read the above information. The nature, demands, risks and benefits of this investigation have been satisfactorily explained to me. I knowingly assume the risks involved and understand that I may withdraw my consent and discontinue my participation at anytime without penalty or loss of benefit to myself. In signing this consent, I voluntarily consent to participate in the investigation as described to me by Stacy Lofton.

Date: _____

Signature of Participant: _____

I certify that I have explained to the above individual the nature, purpose, the potential benefits, and possible risks associated with participation in this research study, have answered any questions that have been raised, and have witnessed the above signature.

Signature of Investigator: _____

Date: _____

Stacy Lofton, RD, LD
Graduate Student, Department of Kinesiology, Health Promotion and Recreation
University of North Texas
(214) 820-7555
Email: stacyl@baylordallas.edu

**THIS STUDY HAS BEEN REVIEWED BY THE UNIVERSITY OF NORTH TEXAS
COMMITTEE FOR THE PROTECTION OF HUMAN SUBJECTS
(Phone: 940/565-3940)**

APPENDIX C

STUDENT-NEWMAN-KEULS POST HOC TEST

Mean Difference Between Actual Body Mass Index (ABMI) and Social Physique Anxiety for Male and Female College Students

ABMI	N	Subset for alpha = .05	
		1	2
1.00	308	32.30	
2.00	24	33.71	33.71
3.00	131	35.32	35.32
4.00	47		36.87
Significance		.208	.175

Mean Difference Between Actual Body Mass Index (ABMI) and Bulimia in Male and Female College Students

ABMI	N	Subset for alpha = .05
		1
3.00	132	.5379
1.00	24	.5833
2.00	313	.7891
4.00	48	1.021
Significance		.467

Mean Difference Between Actual Body Mass Index (ABMI) and Body Dissatisfaction in Male and Female College Students

ABMI	N	Subset for alpha = .05	
		1	2
1.00	24	5.29	
2.00	311	7.16	
3.00	130		9.92
4.00	45		11.76
Significance		.174	.182

Mean Difference Between Actual Body Mass Index and Drive for Thinness in Male and Female College Students

ABMI	N	Subset for alpha = .05
		1
1.00	24	4.54
2.00	308	5.58
3.00	133	6.52
4.00	47	6.62
Significance		.111

Mean Difference Between Actual Body Mass Index (ABMI) and Dietary Restraint in

Male and Female College Students

ABMI	N	Subset for alpha = .05	
		1	2
1.00	23	8.43	
2.00	305	10.56	
3.00	124		13.06
4.00	45		14.16
Significance		.072	.353

Mean Difference Between Actual Body Mass Index (ABMI) and Social Physique

Anxiety in Male College Students

ABMI	N	Subset for alpha = .05	
		1	2
2.00	116	29.62	
3.00	87	31.61	31.61
1.00			34.43
4.00			35.42
Significance		.056	.265

Mean Difference Between Actual Body Mass Index (ABMI) and Bulimia in Male

College Students

ABMI	N	Subset for alpha = .05
		1
1.00	7	.1429
3.00	87	.5977
2.00	117	.6752
4.00	34	.8824
Significance		.416

Mean Difference Between Actual Body Mass Index (ABMI) and Body Dissatisfaction in

Male College Students

ABMI	N	Subset for alpha =. .05		
		1	2	3
1.00	7	1.57		
2.00	116	2.74		
3.00	84		6.92	
4.00	32			10.78
Significance		.459	1.000	1.000

Mean Difference Between Actual Body Mass Index (ABMI) and Drive for Thinness in

Male College Students

ABMI	N	Subset for alpha = .05		
		1	2	3
1.00	7	2.29		
2.00	117	3.50	3.50	
3.00	87		4.97	4.97
4.00	33			6.42
Significance		.271	.187	.188

Mean Difference Between Actual Body Mass Index (ABMI) and Dietary Restraint in

Male College Students

ABMI	N	Subset for alpha = .05	
		1	2
1.00	7	4.86	
2.00	112	6.83	
3.00	81		11.36
4.00	32		14.06
Significance		.228	.099

Mean Difference Between Actual Body Mass Index (ABMI) and Social Physique

Anxiety in Female College Students

ABMI	N	Subset for alpha = .05	
		1	2
1.00	17	33.41	
2.00	192	35.55	
4.00	14		40.29
3.00	44		42.61
Significance		.372	.331

Mean Difference Between Actual Body Mass Index (ABMI) and Bulimia in Female

College Students

ABMI	N	Subset for alpha = .05
		1
3.00	45	.4222
1.00	17	.7647
2.00	196	.8571
4.00	14	1.36
Significance		.293

Mean Difference Between Actual Body Mass Index (ABMI) and Body Dissatisfaction in Female College Students

ABMI	N	Subset for alpha = .05	
		1	2
1.00	17	6.82	
2.00	195	9.79	
4.00	13		14.15
3.00	46		15.39
Significance		.146	.545

Mean Difference Between Actual Body Mass Index (ABMI) and Drive for Thinness in Female College Students

ABMI	N	Subset for alpha = .05	
		1	2
1.00	17	5.47	
2.00	191	6.85	6.85
4.00	14	7.07	7.07
3.00	46		9.46
Significance		.521	.180

Mean Difference Between Actual Body Mass Index (ABMI) and Dietary Restraint in Female College Students

ABMI	N	Subset for alpha = .05	
		1	2
1.00	16	10.00	
2.00	193	12.73	17.73
4.00	13		14.38
3.00	43		16.26
Significance		.097	.079

Mean Difference Between Race/Ethnicity and Social Physique Anxiety in Male and Female College Students

Race/Ethnicity	N	Subset for alpha = .05
		1
6.00	17	30.59
1.00	98	30.77
3.00	39	31.92
5.00	29	33.66
2.00	330	34.67
Significance		.192

Mean Difference Between Race/Ethnicity and Bulimia in Male and Female College

Students

Race/Ethnicity	N	Subset for alpha = .05
		1
1.00	100	.4600
3.00	41	.4878
5.00	29	.5172
2.00	333	.8498
6.00	17	1.000
Significance		.651

Mean Difference Between Race/Ethnicity and Body Dissatisfaction in Male and Female

College Students

Race/Ethnicity	N	Subset for alpha = .05
		1
6.00	17	4.53
1.00	95	6.93
5.00	29	7.62
3.00	43	7.98
2.00	329	8.76
Significance		.079

Mean Difference Between Race/Ethnicity and Drive for Thinness in Male and Female

College Students

Race/Ethnicity	N	Subset for alpha = .05	
		1	
6.00	17	3.47	
5.00	29	5.31	
1.00	97	5.52	
3.00	43	5.91	
2.00	329	6.14	
Significance		.108	

Mean Difference Between Race/Ethnicity and Dietary Restraint in Male and Female

College Students

Race/Ethnicity	N	Subset for alpha = .05	
		1	2
6.00	16	8.13	
1.00	93	9.29	9.29
5.00	28	10.00	10.00
3.00	40	10.25	10.25
2.00	323		12.41
Significance		.439	.124

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