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Relationship Among Membership In Recognized Student Organizations On Body Image Satisfaction And Eating Behaviors Of University Students

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RELATIONSHIP AMONG MEMBERSHIP IN RECOGNIZED STUDENT
ORGANIZATIONS ON BODY IMAGE SATISFACTION AND EATING
BEHAVIORS OF UNIVERSITY STUDENTS

CAVALLERO

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Relationships Among Membership in Recognized Student Organizations on
Body Image Satisfaction and Eating Behaviors of University Students
(TITLE)

BY

Beth G. Cavallero

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

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YEAR

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Abstract

Body image dissatisfaction and disordered eating behaviors are widespread among university students. These issues are more common in females. Members from several organizations, such as athletics and sororities, may be at increased risk. This study focuses on the prevalence of poor body image and disordered eating among university students and associations with involvement in recognized student organizations. The research design is experimental and descriptive. A self-report instrument was previously developed; students enrolled in one class serve as the sample. Results found body image dissatisfaction is a significant issue among surveyed students. Males in fraternities and athletics and honor society females have significant associations with body image or eating behaviors issues in this study. Future research and nutrition education is needed.

Dedication

Special thanks to all family and friends who provided support during the preparation of the work, especially Susan Ulrich and Andrew Peralta.

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CHAPTER 1

The Problem

Body image dissatisfaction and disordered eating behaviors are prevalent among college and university students, especially among women (Hoyt, Hamilton, & Rickard, 2003; Schwitzer, Bergholz, Dore, & Salimi, 1998; Lofton & Bungum, 2001; Rabak-Wagener, Eickhoff-Shemek, & Kelly-Vance, 1998). Previous research has found a link between an individual's body image and body size with the risk of eating disorder behaviors, with body image and weight concerns central to eating disturbances in college women (Ignacek, Bonds-Raacke, Villa, & Nicks, 1999; Snyder, 1997). Interestingly, body image perception may be more important than body weight in developing dieting or disordered eating behaviors (Cooley & Toray, 2001). All eating behaviors, ranging from normal eating patterns to DSM-IV diagnosable eating disorders, may fall along a continuum of these behaviors (Shisslak, Crago, & Estes, 1995; Cooley & Toray, 2001).

College and university women tend to be a population that shows mainly subclinical disordered eating behaviors, rather than full-blown eating disorders (Hoyt, et al., 2003; Schwitzer, et al., 1998; Schwitzer, Rodriguez, Thomas, & Salimi, 2001). While women are at greater risk than males of developing poor body image and subclinical or clinical eating disorders, men are not without risk (Miller & Pumariega, 2001). Results from past studies (Prouty, Protinsky, & Canady, 2002; Nelson, Hughes, Katz, & Searight, 1999) have shown that up to 15-20% of college women

and up to 10% of college men have displayed disordered eating patterns. Some specific groups of college women, such as athletes and sorority members, may be at higher risk for eating disorders than others (Alexander, 1998; Schulken, Pinciario, Sawyer, Jensen, & Hoban, 1997; Miller & Pumariega, 2001; Schwitzer, et al., 1998; Worobey & Schoenfeld, 1999).

Problematic eating behaviors and body dissatisfaction in men and women have been shown to be associated with other psychological distresses, especially low self-esteem, depression, and possibly alcohol abuse (Nelson, et al., 1999; Turner, Hamilton, Jacobs, Angood, & Dwyer, 1997; Cooley & Toray, 2001).

Statement of the Problem

Eating disorders, such as anorexia nervosa (AN) and bulimia nervosa (BN), subclinical levels of disordered eating, and body dissatisfaction are prevalent among college and university students, especially females (Prouty, et al., 2002; Schwitzer, et al., 2001; Schulken, et al., 1997; Shisslak, et al., 1995).

Studies discussed by Prouty, et al. (2002) have estimated that 15% or more of American college women may meet diagnostic criteria for AN and BN, and the majority of college females demonstrate at least one or more disordered eating symptom. Body image dissatisfaction has been linked with various psychosocial issues in women, such as low self-esteem and increased public self-consciousness, social anxiety levels, and fixation with physical appearance (Wegner, Hartmann, & Geist, 2000).

Furthermore, an individual's body image perception may be more

important than body weight in developing dieting or disordered eating behaviors (Cooley & Toray, 2001). Therefore, distorted body image can lead to a variety of problems for women.

In the United States, there is a large discrepancy between the ideal female and male bodies and the actual body sizes and shapes of people (Schulken, et al., 1997). This ideal includes a body weight that is unrealistic and unattainable for most individuals. Unfortunately, since most are unable to meet this ideal, body dissatisfaction and restrictive dieting can occur, which are risk factors for eating disorder development (Schulken, et al., 1997). Members of certain groups, such as dancers, actors, athletes, and sorority women have been identified to be at higher risk for developing eating disorders (Schulken, et al., 1997; Prouty, et al., 2002). While men are at lower risk for developing eating disorders, certain groups such as male wrestlers, jockeys, and homosexuals may be at increased risk (Miller & Pumariega, 2001). The present study aimed to determine the prevalence of body image dissatisfaction and eating disorder development among students at a mid-sized, rural Midwestern university and possible correlations associated with their involvement in recognized student organizations.

Purpose of the Research

The purpose of this study was to examine body image satisfaction and eating behaviors of male and female university students, and any potential correlations associated with their

involvement(s) with recognized student organizations (RSO) at a mid-sized, rural Midwestern university.

Research Objectives

The following objectives guided this study:

1. To determine if a significant correlation exists between self-reported height and weight and chosen personal body description (underweight, healthy and normal weight, overweight, and obese) for male and female university students.
2. To examine the satisfaction of male and female university students with their body image.
3. To determine if a significant difference exists for body image satisfaction between male and female university students.
4. To determine the prevalence of potential risk for development of eating disorders among male and female university students.
5. To determine if a significant difference exists for eating behaviors between male and female university students.
6. To determine if a significant correlation exists between body image satisfaction and RSO memberships among male and female university students.
7. To determine if a significant correlation exists between potential risk of eating disorders and RSO memberships among male and female university students.

8. To determine if a significant correlation exists between body image satisfaction and risk for eating disorders among male and female university students.

Research Hypotheses

A null hypothesis was developed for each research objective and all are stated below.

1. There will be no significant correlation found between self-reported height and weight and chosen personal body description (underweight, healthy and normal weight, overweight, and obese) for male and female university students.
2. There will be no body image dissatisfaction found for male and female university students.
3. There will be no significant difference existing for body image satisfaction between male and female university students.
4. There will be no prevalence of potential risk found for the development of eating disorders among male and female university students.
5. There will be no significant difference existing for eating behaviors between male and female university students.
6. There will be no significant correlation between body image satisfaction and RSO memberships among male and female university students.

7. There will be no significant correlation between potential risk for eating disorders and RSO memberships among male and female university students.
8. There will be no significant correlation between body image satisfaction and risk for eating disorders among male and female university students.

Significance of the Study

Poor body image satisfaction is prevalent among young men and women, with approximately 66% of young women and 33% of young men being dissatisfied (Rabak-Wagener, et al., 1998). Furthermore, increased levels of body dissatisfaction have been identified in the literature as a key element of both clinically diagnosed eating disorders and in problematic eating patterns (Cooley & Toray, 2001; Ignacek, et al., 1999). Studies have estimated that 15% or more of American college and university women may meet diagnostic criteria for AN and BN, and the many demonstrate at least one or more disordered eating symptom or subclinical behavior (Prouty, et al., 2002; Shisslak, et al., 1995). While college men display clinical eating disorders at a lower percentage than women, they are also at risk (Miller & Pumariega, 2001; Eliot & Baker, 2001). In examining the prevalence of body image dissatisfaction and disordered eating of male and female university students, the data from this study may help guide future university intervention and nutrition education efforts focused on body image and eating disorders, especially targeted towards members of student organizations.

Assumptions

Several assumptions were important to consider throughout this study. One assumption was that participants would be willing to participate in data collection, and would report honestly. Secondly, it was assumed that university males and females would be aware of their current heights and weights, and report these honestly. The last assumption was that most university students would hold membership in at least one RSO.

Definition of Terms

1. *Body image*: An individual's mental image of self, including perceptions, thoughts, feelings, and attitudes, and evaluation of their own body. Body image also includes the influence and evaluation of this mental image on their behavior (DiGioacchino, Sargent, and Topping, 2001; Garner, 1997).
2. *Body image satisfaction*: Level of lack of worry or concern with appearance, body weight, shape and size, and condition (Williams & Depcik, 2001; Prouty, et al., 2002; Heatherton, Nichols, Mahamedi, & Keel, 1995; Graham & Jones, 2002).
3. *Body image dissatisfaction*: Considerable personal concern with small or imagined fault(s) in appearance, body weight, shape and size, and condition (Williams & Depcik, 2001; Prouty, et al., 2002; Heatherton, Nichols, Mahamedi, & Keel, 1995; Graham & Jones, 2002). Increased levels of body dissatisfaction have been identified as a

key element of clinically-diagnosed eating disorders and in problematic eating patterns (Cooley & Toray, 2001; Ignacek, et al., 1999). Body image dissatisfaction is more prevalent than disordered eating behaviors and eating disorders among college students (Prouty, et al., 2002; Schwitzer, et al., 2001; Schulken, et al., 1997; Lofton & Bungum, 2001; Rabak-Wagener, et al., 1998; Turner, et al., 1997).

4. *Eating behavior*: Behaviors and attitudes pertaining to food, eating, and body weight; may include normal eating patterns, dieting, binge eating, fasting, vomiting, and use of diet pills (Shisslak, et al., 1995; Cooley & Toray, 2001; Peters, Amos, Hoerr, Koszewski, Huang, & Betts, 1996). Eating behaviors tend to fall along a continuum, from normal eating habits to clinical eating disorders (Shisslak, et al., 1995; Cooley & Toray, 2001).
5. *Clinical eating disorder*: Eating behaviors and/or attitudes an individual has that qualify for full diagnosis of eating disorders anorexia nervosa (AN) and/or bulimia nervosa (BN); less common among university students than subclinical eating disorders (Hoyt, et al., 2003; Schwitzer, et al., 2001; Prouty, et al., 2002).
6. *Subclinical eating disorder*: More common among university students, may also be called Eating Disorders Not Otherwise Specified (EDNOS); symptoms of clinical eating disorders are present and cause the individual

considerable distress, but are less frequent or severe (Hoyt, et al., 2003; Schwitzer, et al., 2001; Schwitzer, et al., 1998; Shisslak, et al., 1995).

7. *Recognized student organization (RSO)*: An organization students may participate in at a college or university that is registered with the campus; may include athletic, honorary, religious, service, social, political, or academic organizations (Eastern Illinois University, 2003).
8. *Body Mass Index (BMI)*: A measure of relative weight calculated by dividing a person's weight by their height (weight in kilograms/height in meters²) (Snyder, 1997; Heatherton, et al., 1995). BMI can be used to screen individuals for being underweight, overweight, or obese and is a measure of an individual's degree of body adiposity (Mahan & Escott-Stump, 2000).
 - a. *Underweight*: A body mass index value less than 18.50 (McArthur & Howard, 2001).
 - b. *Normal, healthy weight*: Body mass index values between 18.50 and 24.99; associated with the lowest risk of early death (McArthur & Howard, 2001; Mahan & Escott-Stump, 2000).
 - c. *Overweight*: Body mass index values between 25.00 and 29.99 (McArthur & Howard, 2001; Mahan & Escott-Stump, 2000).

d. *Obese*: Body mass index values greater than 30.00
(Mahan & Escott-Stump, 2000).

CHAPTER 2

Review of Literature

Personal body image has been described as an attitude that every individual develops, fueling activities and behaviors, and helping to develop feelings of self-efficacy through body evaluation (Wiggins & Moode, 2000; DiGiacchino, et al., 2001). In past research, relationships between body image, body size, and disordered eating have been identified (Ignacek, et al., 1999; Furnham, Badmin, & Snead, 2002). Dieting and other methods used to lose weight are fairly widespread in American college women, and can be a contributing factor in the development of eating disorders (McArthur & Howard, 2001; Miller & Pumariega, 2001; DiGiacchino, et al., 2001). Furthermore, according to Prouty and colleagues (2002), most American college women display at least one or more symptoms that are associated with disordered eating, which may be described as a subclinical eating disorder. Some specific groups of college students may be at increased risk, such as female athletes or sorority women. Furthermore, college males are not without risk (Eliot & Baker, 2001; Miller & Pumariega, 2001). This review is organized by research concerning body image, subclinical eating disorders and the eating behaviors continuum, prevalence of disordered eating among men, and other specific populations at risk for developing eating disorders.

Body Image

According to Garner (1997), body image can be described as a mental representation of self that influences behavior, self-esteem, and psychopathology. Body image disturbances consist of personal concern with a small or imagined fault in one's appearance (Williams & Depcik, 2001). Many women have negative perceptions of their bodies and tend to see themselves as overweight, or fat; these thoughts have also been found to a lesser extent in men (Smith, Parr, Hornakj, & Betts, 2001). Among college women, research has shown that simply a perception of being overweight is associated with greater body image dissatisfaction and all women surveyed desired a smaller body size than their own (Turner, et al., 1997). Additionally, researchers have noted that body image dissatisfaction and disordered eating are much more prevalent than eating disorder statistics represent (Prouty, et al., 2002; Schwitzer, et al., 2001; Schulken, et al., 1997; Lofton & Bungum, 2001; Rabak-Wagener, et al., 1998; Turner, et al., 1997).

Poor body image is quite widespread in the university population. Results of a study reviewed by Schwitzer & Bergholz indicated that 30% of college women were very worried about their body image, and 25% worried about weight control (1998). Past research has found that up to two-thirds of young women and one-third of young men are significantly dissatisfied with their body shape, size, condition, and appearance (Rabak-Wagener, et al., 1998).

Body Image and Weight Issues

Fear of weight gain has been associated with poorer body image among college women who have completed their freshman year (Graham & Jones, 2002). Forty-nine freshman women were surveyed at the beginning and end of their first year concerning the "Freshman 15" myth, eating attitudes and behaviors, body image, and exercise habits (Graham & Jones, 2002). Twenty-nine percent of the women surveyed were extremely worried about gaining 15 pounds during the first year, while 36.4% were slightly concerned (Graham & Jones, 2002). Graham & Jones determined that women who were more worried about weight gain at the beginning were more likely at the end of the year to think about their weight, have poorer body image, and tended to perceive themselves as overweight (2002). Many college women of Euro-American and Asian-American descent felt better about themselves if they lost weight (Koff, Benavage, & Wong, 2001). Additional research indicated more than 70% of young women surveyed were dissatisfied with their bodies and desired to lose weight (Heatherton, et al., 1995). Results from a study by Cooley & Toray (2001) found that women who were more dissatisfied with their figures when entering college tended to show worsening eating patterns at the end of their freshman year.

Lofton and Bungum (2001) surveyed college men and women, noting inconsistencies between actual body weight and perceived body weight. Women tended to see themselves as overweight when they were not and failed to see themselves as underweight (Lofton

& Bungum, 2001). Similar results regarding women have been replicated in other studies (Furnham, et al., 2002; McArthur & Howard, 2001; Williams & Depcik, 2001; Ignacek, et al., 1999). However, the men surveyed perceived themselves as underweight when they were not and desired to be heavier (Lofton & Bungum, 2001). Furthermore, as BMI for participants increased, so did negative attitudes and behaviors towards one's weight, body shape, and eating habits (Lofton & Bungum, 2001).

Risk for Psychological and Social Issues

Individuals who have displayed low body satisfaction are at risk for other problems. Dissatisfaction with body image has been linked to psychological and social issues, such as increased social anxiety, obsession with physical appearance, poor self-esteem, and depression (Koff, et al., 2001; Schwitzer, et al., 2001; Furnham, et al., 2002; Turner, et al., 1997). Poor self-esteem and higher levels of public self-consciousness are associated with higher levels of dieting, disordered eating, and body dissatisfaction (Akan & Grilo, 1995).

Eating Behaviors Continuum and Subclinical Eating Disorders

Much research points to the concept that eating behaviors tend to fall along a continuum, ranging from normal eating habits to diagnosable eating disorders (Shisslak, et al., 1995; Cooley & Toray, 2001). Anywhere from 1-4% (Hoyt, et al., 2003) to 6% (Schwitzer, et al., 2001) to more than 15% of all college women in the United States may meet DSM-IV diagnostic criteria for the eating disorders anorexia nervosa and bulimia nervosa (Prouty, et

al., 2002). Additionally, many have considerable distress and interference in their lives resulting from disordered eating attitudes and behaviors, without actually meeting criteria for a full-blown eating disorder (Cooley & Toray, 2001). Collegiate women and adolescent girls are most likely at risk for developing questionable eating behaviors (Peters, et al., 1996). College women with subclinical eating disordered behaviors are at higher risk for developing eating disorders later in life (Prouty, et al., 2002).

Dieting in the University Population

Among both men and women, dieting behaviors are common. Up to 80% of young women and 30% of young men have been found to be dieters in some studies (Peters, et al., 1996). Dieters are more likely than non-dieters to develop subclinical eating disorders, and 15% of individuals with subclinical eating disorders are likely to develop a full-blown eating disorder, diagnosable by DSM-IV criteria (Shisslak, et al., 1995). In research comparing dieting behaviors of Asian and United States-born women at a United States university, the average age of college women native to the United States to begin dieting was 15-16 years (Tsai, Hoerr, & Song, 1998). In a survey of young adults, females and males who were in college or were college graduates had a higher percentage of dieting history or behaviors than non-students (Peters, et al., 1996). These individuals were more likely to have eating disordered behaviors or attitudes, such as low body image, binge eating, fasting, vomiting, and use of diet pills

(Peters, et al., 1996). Therefore, dieting behaviors often fuel future problematic eating behaviors.

Problematic Eating Behaviors

Nelson, Hughes, Katz, and Searight found that 20% of undergraduate women and 10% of men surveyed met or exceeded the cut-off for disordered eating; in addition, nearly one-third of all surveyed were considered problem eaters (1999). These problem eaters tended to be extremely preoccupied with food and were more likely to have lower body image and self-esteem (Nelson, et al., 1999). Female and male problem eaters were highly terrified of becoming overweight, tended to think obsessively of burning calories while exercising, and were increasingly preoccupied with the thought of fat on their bodies. Females were also preoccupied with the notion of being thin and showcased these thoughts and behaviors at higher rates than male problem eaters (Nelson, et al., 1999). In other research, female students were six times more likely than male students to use diet pills or powders (Peters, et al., 1996).

In a study of 130 female college students concerning eating disordered behaviors and body image issues, 35 out of 130 (26.9%) reported participating in potentially harmful eating behaviors, such as self-induced vomiting after eating and the use of diet pills or laxatives for weight control (Ignacek, et al., 1999). Researchers found these behaviors were significantly associated with lower body satisfaction and distortion of body size and

shape perception, when compared to students who did not practice these behaviors (Ignacek, et al., 1999).

Prevalence of Subclinical Eating Disorders

Found to be more common among young women and men, including college or university students, are subclinical eating disorders, or Eating Disorders Not Otherwise Specified (EDNOS) (Hoyt, et al., 2003; Schwitzer, et al., 1998; Schwitzer, et al., 2001). The EDNOS, or subclinical disorders, are less severe than clinical anorexia nervosa (AN), or bulimia nervosa (BN), and are usually associated with significant weight preoccupation and dissatisfaction, body image issues, and subdiagnostic problems with eating and compensatory behaviors (Schwitzer, et al., 1998; Schwitzer, et al., 2001). The main difference from full blown eating disorders is that the frequency and severity of behaviors are less in subclinical eating disorders (Shisslak, et al., 1995). EDNOS criteria may be assigned when symptoms of AN or BN appear but DSM-IV criteria are not entirely met; another requirement is that the symptoms cause the person a substantial amount of distress (Schwitzer, et al., 2001). Up to 25-70% of female undergraduates may have direct or indirect symptoms of disordered eating but do not meet DSM-IV criteria for AN or BN (Hoyt, et al., 2003; Schwitzer, et al., 2001).

Characteristics of Subclinical Eating Disorders

Bergholz and Dore developed the EDNOS young adult prototype based on their research with the collegiate female population, who is described as a person that thinks about food most of the

time, counts fat and calories, is a frequent weigher and is very "scale-oriented" (Schwitzer, et al., 1998; Schwitzer, et al., 2001). This individual also eats secretly, excessively exercises, resists offers of nutrition education, has weight fluctuations, and is moderately depressed with low self-esteem (Schwitzer, et al., 1998; Schwitzer, et al., 2001). Behaviors that may be adopted include laxatives, purging, excessive exercising, calorie and fat gram obsession, and excessive weight monitoring (Hoyt, et al., 2003). Individuals are also usually afflicted by a psychological disturbance, such as depression, anxiety, decreased self-esteem, poor body image, social withdrawal, obsessive-compulsive behavior, suicidal attempts, substance abuse, or past history of eating disorders (Shisslak, et al., 1995; Specker, Westermeyer, & Thuras, 2000).

Disordered Eating Behaviors among Men

In the past, males with eating disorders were considered rare and atypical (Woodside, Garfinkel, Lin, & Goering, et al., 2001). Past studies on college students have shown that men tended to be more satisfied with their appearance when compared to women (Adame, Johnson, & Cole, 2001). Current research has theorized that eating disorder statistics on males may be underestimated (Furnham, et al., 2002). While disordered eating is less prevalent in males than females, college-aged men are not without risk for body dissatisfaction and disordered eating behaviors (Eliot & Baker, 2001).

However, the majority of available literature on males focused on clinically diagnosed eating disorders, and less on subclinical or EDNOS. Information was less available on men with eating disorders compared to women and concentrated mainly on case reports, few case series and case-controlled studies (Nelson, et al., 1999; Carlat, Camargo, & Herzog, 1997). The lack of research may be related to assumed infrequency of eating disorders when compared to women; also, men may have been less likely to seek treatment for eating disorders or considered it a problem that only affects females (Olivardia, Pope, Mangweth, & Hudson, 1995; Furnham, et al., 2002).

Prevalence and Characteristics of Males with Disordered Eating Behaviors

Males are considered to represent 10-15% of patients with BN, with similar prevalence for AN (Carlat, et al., 1997; Menaster, 2002). The rate of males with full or partial eating disorders was determined to be 2%, in a study focusing on a large community sample of men (Woodside, et al., 2001). Binge eating and EDNOS may be most prevalent, according to Menaster (2002). Men with eating disorders tended to display similar traits in the disease as women (Olivardia, et al., 1995; Miller & Pumariega, 2001; Woodside, et al., 2001). A relationship between body dissatisfaction and lower self-esteem has been found in men as well as women (Furnham, et al., 2002). However, when compared to women (mean age=17.2 years), men tended to have later onset of eating disorders, ranging from 19.3 to 20.6 years (Menaster,

2002; Carlat, et al., 1997). Populations at increased risk include participants in sports that demand weight control (i.e., wrestling and horse-racing), homosexuals, and men in high-risk occupations (i.e., appearance or food related, and traditionally female positions) (Eliot & Baker, 2001; Miller & Pumariega, 2001; Carlat, et al., 1997). Furthermore, men have displayed misperceptions of their body size, and tended to prefer a larger, not obese, body size and weight (Lofton & Bungum, 2001).

Carlat, Camargo, and Herzog researched a clinical group of eating disordered males and found that 32% were affected by EDNOS (1997). Sixteen-percent of the males afflicted with an eating disorder were in occupations considered to be at high-risk, such as appearance based (modeling, acting), food-related, and occupations traditionally held by women (Carlat, et al., 1997). When sexuality was determined, 27% of total patients were homosexual or bisexual, which researchers indicated was significant considering that data has shown 1-6% of healthy males were homosexuals (Carlat, et al., 1997). Boroughs & Thompson found in their research that homosexual males have higher levels of disordered eating and body dissatisfaction than heterosexual males (2002).

When comparing collegiate men with eating disorders to those without, a study by Olivardia and colleagues found that the number of homosexuals and bisexuals was not significantly different between the two groups (1995). The researchers theorized that the high levels of homosexual or bisexual males

with eating disorders previously reported may be because homosexual males might have been more likely seek treatment for eating disorders (Olivardia, et al., 1995). Other research has noted that the higher rate of eating disorders among homosexual men is controversial (Menaster, 2002). The study also compared eating disordered college men and women; results showed that body image dissatisfaction was similar among both eating disordered groups (Olivardia, et al., 1995). Many of the eating disordered men also participated in potentially harmful eating behaviors, such as self-induced vomiting, laxative abuse, fasting, and excessive exercise for weight loss (Olivardia, et al., 1995).

Specific Populations at Risk

While all college students are considered to be at risk for developing eating disorders, some specific populations may have increased risk. Students in groups that focus on fitness or appearance tend to be at higher risk; other specific groups, based on previous research, include sorority women, female athletes, female students in acting, dancing, or nutrition, men involved in "high risk" occupations (such as appearance or food-related, or occupations traditionally pursued by women), homosexual men, and men in sports that pressure weight control (Alexander, 1998; Schulken, et al., 1997; Miller and Pumariega, 2001; Schwitzer et al., 1998; Worobey & Schoenfeld, 1999; Carlat, et al., 1997; Olivardia, et al., 1995; Eliot and Baker, 2001; Menaster, 2002). The men who are considered to be at high risk have been discussed in the previous section.

Sorority Women

Sorority women have displayed higher levels of body dissatisfaction and bulimic tendencies than most college women, and seem to prefer a thinner ideal body size for themselves and women in general (Schulken, et al., 1997). While research in this area has been limited, sorority women have been anecdotally associated with body image and appearance preoccupation (Schulken, et al., 1997). Women in general have been found to be more concerned with physical appearance (Muth & Cash, 1997). Those who are increasingly concerned with maintaining or creating a certain social appearance are more likely to develop eating disordered behaviors in order to meet expectations (Alexander, 1998). Sorority women may also feel more pressured to maintain the thin "ideal" size and thus, involve themselves in potentially hazardous weight control attempts, such as laxatives, diet pills, and fasting (Schulken, et al., 1997).

In a study performed by Schulken and colleagues of 627 sorority women, it was hypothesized that body dissatisfaction and disordered eating may be more prevalent in social groups that traditionally emphasize the thin "ideal" body size (1997). The researchers determined that sorority women may have greater fear of gaining weight and becoming fat, are more dissatisfied with their bodies, and are increasingly weight-preoccupied and concerned with dieting than non-Greek college women surveyed in other studies (Schulken, et al., 1997). Women in the Greek community may also have body size

perceptions that are distorted, by perceiving that their body is larger or smaller than actual size (Schulken, et al., 1997). This population has shown in past studies to have a higher risk than the general college female population for developing eating disorders, although results in some have not reached statistical significance (Alexander, 1998; Schulken, et al., 1997; Prouty, et al., 2002).

Alexander surveyed 239 females on one campus to examine prevalence of clinical and subclinical eating disorders, including sorority members, dancers, athletes, and a control group of women not involved with any of the above groups (1998). Sorority members did not show significantly more eating disordered behaviors than either the control or activity (athletics & dance) groups (Alexander, 1998). However, non-significant trends pointed towards sorority women scoring more pathologically than control; activity members tended to score more pathologically than sorority members (Alexander, 1998). Interestingly, both sorority members and activity participants tended to have increased eating disordered behaviors but also showed more self-esteem than control (Alexander, 1998). The researchers hypothesized that disordered eating habits may be, for these women, an effective form of weight management in order to perform as athletes or meet societal ideals (Alexander, 1998). Despite this theory, both sorority women and female athletes represent an at-risk group for eating disorders on college or university campuses.

Athletes

Another high-risk group among university students is female athletes. Behaviors related to eating, health, and decisions concerning physical activity have been found to be linked to body image, which has been found to be related with disordered eating (Wiggins & Moode, 2000; Ignacek, et al., 1999; Furnham, et al., 2002). While many people participate in regular physical activity to lose or maintain weight and improve body image and appearance, some female athletes may take this normally healthy behavior to an extreme (Williams & Cash, 2001; Worobey & Schoenfeld, 1999). Furthermore, the potential for a competitive athlete to succeed or fail during an event may be related to their body image (Wiggins & Moode, 2000). Past research has noted prevalence rates among athletes show that an estimated 1% have anorexia nervosa, and 30% have bulimia nervosa; however, more recent research has suggested these numbers were produced in studies with methodology errors (Johnson, Powers, & Dick, 1999). In a recent study on athletes in the Norwegian Confederation of Sports, 1.3% met criteria for AN and 8% met criteria for BN (Johnson, et al., 1999).

A significant study on collegiate athletes was performed by Johnson, Powers, & Dick, on 1,445 varsity athletes at 11 division I schools (562 females and 883 males) (1999). Eleven sports were surveyed at these schools: football, basketball, track, swimming, gymnastics, wrestling, cross-country, crew, tennis, Nordic skiing, and volleyball (Johnson, et al., 1999). Results found

that female athletes were significantly more likely to binge eat, vomit to lose weight, or use diet pills/laxatives (Johnson, et al., 1999). However, more male athletes used saunas or steam baths for weight loss (Johnson, et al., 1999). While both genders desired to be at a fat content below ideal, the female athletes were overall less satisfied with their appearance and had lower self-esteem (Johnson, et al., 1999). Likewise, more females classified at subclinical eating disorders: 2.85% for anorexia nervosa (compared to 0% of males) and 9.2% for bulimia nervosa (.005% of males) (Johnson, et al., 1999).

After the study's completion, Johnson, et al., noted that the actual numbers may be higher than found in their research (1999). Self-report studies may result in a significant underestimate of problems, due to tendency of elite athletes to underreport problems in this area (Johnson, et al., 1999). However, the researchers did note that among the female athletes, gymnasts were at high risk for development of disordered eating habits, and among the males, football players had the highest body dissatisfaction (Johnson, et al., 1999).

Summary

Many college students, males and females, showcase at least some form of body image disturbance or disordered eating habits. While DSM-IV diagnosable eating disorders do occur in this population, subclinical eating behaviors and attitudes are much more common. Females are at a higher risk than males in the university community for developing poor body image and

disordered eating habits, but collegiate males are still at risk, especially those in at-risk groups. Past research has also expressed that many subgroups of females, such as those in the Greek community and athletic programs, are at higher risk for developing these issues.

Based on the literature review, this study focused on examining the occurrence of body image dissatisfaction and disordered eating habits among male and female students at a mid-sized, rural Midwestern university. Potential correlations with student involvement in different recognized student organizations, such as sororities, fraternities, and athletics, were examined, as well as student perceptions of body shape and size compared to actual shape and size (based on self-reported weights and heights).

CHAPTER 3

Methodology

The purpose of this study was to examine body image satisfaction and eating behaviors of male and female university students, and any potential correlations associated with their involvement(s) with recognized student organizations (RSO) at a mid-sized, rural Midwestern university. Eight objectives guided this study:

1. To determine if a significant correlation exists between self-reported height and weight and chosen personal body description (underweight, healthy and normal weight, overweight, and obese) for male and female university students.
2. To examine the satisfaction of male and female university students with their body image.
3. To determine if a significant difference exists for body image satisfaction between male and female university students.
4. To determine the prevalence of potential risk for development of eating disorders among male and female university students.
5. To determine if a significant difference exists for eating behaviors between male and female university students.

6. To determine if a significant correlation exists between body image satisfaction and RSO memberships among male and female university students.
7. To determine if a significant correlation exists between potential risk of eating disorders and RSO memberships among male and female university students.
8. To determine if a significant correlation exists between body image satisfaction and risk for eating disorders among male and female university students.

Description of the Design

An experimental, descriptive research design was used to guide this study (Leedy & Ormrod, 2001). Survey research, and various statistical tests were performed, using a self-report instrument. The sample for the study included all students (n=200) enrolled in four sections of the university's "Nutrition in a Global Society" course. These students were chosen due to assumed variety of majors, gender, and academic years, in addition to serving as the sample.

The data collection for the study occurred during one class period for each section. A self-report instrument was developed and administered by the researcher to collect the data from each section. The data analysis techniques used in this study included all quantitative measures. This chapter is organized into participants, instrumentation, and discussion of the pilot study, data collection, and data analysis.

Participants

A convenience sampling method of students enrolled in a Family & Consumer Sciences (FCS) introductory nutrition course, "Nutrition in a Global Society", was used for this study. The sample included students enrolled in four separate sections of the course (n=200). However, a total of 153 students were actually present during the days of data collection; furthermore, a total of eight students did not fill out the survey completely. Therefore, for the actual data analysis, a total of 145 participants were included (females=115, males=30). Students in this course were chosen because, while the course is a requirement for many FCS majors, students from a variety of other majors tend to enroll as well. Furthermore, this course was also chosen because of convenience. Several strengths in choosing this sample included access to a fairly large group of students and also to provide instructors of this course with information concerning their students' opinions and thoughts concerning body image and eating behaviors. However, due to the convenience sample, generalizability of the research is limited to the sample in this study.

Instrumentation

One data collection instrument was used in this study (see Appendix A). The instrument was self-report in nature with three sections, including 1) demographic and personal information, 2) participants' personal concerns and opinions of their own body image, and 3) participants' personal behaviors and attitudes

concerning eating and food. Sections two and three were combined on the survey but were analyzed separately. Section three was developed based on the "Eating Behaviors Continuum", which was developed at the University of Illinois at Urbana-Champaign in 1997 by two dietitians and the University's Counseling Center (L.A. Burgoon, personal communication, April 3, 2003). The continuum was designed to describe how dieting and restrictive eating could lead to eating disorders in some individuals (see Appendix B) (L.A. Burgoon, personal communication, April 3, 2003). While not validated, the continuum is consistent with the continuum theory described in the literature (Cooley & Toray, 2001; Shisslak, et al., 1995). In previous literature, eating behaviors have been described as falling along a continuum, from healthy eating to clinical eating disorders (Cooley & Toray, 2001; Shisslak, et al., 1995). The instrument does have construct validity, indicating that the instrument measures, to an extent, personal body image and eating behaviors of the participants (Leedy & Ormrod, 2001).

Section 1 - Demographic Information

The demographic information section consisted of six questions. The first four questions addressed the participant's gender, age, self-reported height, and self-reported weight. Self-reported method of obtaining heights and weights was included due to limited class time. Data was collected during regularly scheduled class time. While self-reported heights and weights are prone to errors and recall bias (McArthur & Howard,

2001; Schulken, et al., 1997), this method has been used in many studies within this population (Hoyt, et al., 2003; Schulken, et al., 1997; DeBate, Topping, & Sargent, 2001; Heatherton, et al., 1995; DiGioacchino, et al., 2001; McArthur & Howard, 2001; Snyder, 1997). Furthermore, past research has shown that self-report methods of ascertaining participants' heights and weights correlates highly with objective height and weight measures (Hoyt, et al., 2003). The information from these four questions was used to describe the sample.

The fifth question addressed personal memberships in recognized student organizations (RSOs). Five possible organizational types were included (Greek organization, athletic team, service organization, honorary or honor society, and pre-professional organizations), and "other" was a sixth option, with a blank space for participants to fill in concerning the other organizational type he or she was involved. The information from the fifth question was used to describe the sample, and also used in statistical tests.

The sixth question addressed how participants felt about their current body weight and size. Four options were given, following the statement "Overall, choose which you think describes your current body weight and size", including underweight, healthy weight, overweight, and obese. The information from this question was used to describe the sample and also to compare to participant's body mass index (BMI) calculations from self-reported heights and weights.

Section 2 - Body Image Information

The body image portion of the questionnaire was actually connected to section three, but assessed separately. The body image portion consisted of seven separate statements that the participants ranked on a five-point Likert-type scale, where 1="Always", 2="Almost Always", 3="Sometimes", 4="Rarely", and 5="Never". The statements concerned worrying about gaining weight, comparing current weight and body shape to peers and to those portrayed in the media, thinking about current weight, thinking about losing weight, dissatisfaction with current body size and shape, and thinking about body image which interrupted normal daily events. The scores from each statement were combined to calculate an average body image score, and also used singularly for descriptive and correlational descriptions of the data. A mean body image score was calculated for each participant in order to perform a *t*-test between males and females.

Section 3 - Eating Behaviors & Attitudes

The eating behaviors portion of the self-report questionnaire was developed based on the "Eating Behaviors Continuum," developed at the University of Illinois at Urbana-Champaign (see Appendix B). The continuum describes eating behaviors, from regular eating patterns to eating disorders, as a continuum. The five components of the continuum are regular eating patterns, dieting, preoccupation with dieting, food, calories, fat, body shape and size, disordered eating patterns, and eating disorders. Nineteen statements were developed based

on the continuum, each continuum component's description, and other characteristic thoughts and/or behaviors common in individuals suffering from disordered eating behaviors. Each statement, as in section two, was to be ranked by each subject based on how it applied to him or her on a five-point Likert-type scale, where 1="Always", 2="Almost Always", 3="Sometimes", 4="Rarely", and 5="Never". Scores from the 19 items were combined to give each participant an average eating behaviors score, and scores closer to "1" indicated potential risk for development of eating disorders. These scores were used for descriptive and inferential descriptions of the data. A mean eating behavior score was developed for each participant to perform a t-test between males and females.

Pilot Study

A pilot study was conducted for this research, in October of 2003. The pilot study examined all three components of the self-report questionnaire. The survey was piloted with a sample of 34 students (females=26, males=8) enrolled in an introductory-level food selection and preparation course at the same Midwestern university used in this study. The internal consistency of the instrument was determined to be .9443, using Cronbach's alpha reliability, indicating that the questionnaire was a highly reliable instrument (McArthur & Howard, 2001). The self-report questionnaire also has face validity and content validity, as it was based on the "Eating Behaviors Continuum", which was developed by professionals working in the field of

dietetics, counseling, and psychiatry (Leedy & Ormrod, 2001; L.A. Burgoon, personal communication, April 3, 2003). Furthermore, the instrument had construct validity, indicating that the instrument measures, to an extent, personal body image and eating behaviors of the participants (Leedy & Ormrod, 2001). Three graduate-level professors also reviewed the survey after the initial pilot study. Based on comments and concerns of the researcher and professors within the School of Family & Consumer Sciences, two sections of the initial questionnaire were removed: body image satisfaction with specific body sites, and examination of daily frequency of consumption from the grains, dairy, fruit, vegetable, and meat food groups. These items were dropped in order to focus mainly on overall body image and eating behaviors and attitudes in this study.

Data Collection

In April 2003, data were collected from all four sections of the "Nutrition in a Global Society" course during one course meeting for each section, with the researcher responsible for all data collection. The researcher contacted the instructors responsible for teaching each section of the course to inquire about interest in letting their students participate in the study. All four instructors agreed to allow the researcher access to their students as participants. A date and time was set up between the researcher and each instructor for data collection during normally scheduled class time. A total of 200 students were enrolled in these four sections; however, only 153

students were present during data collection times. Each of these students was asked to participate in this study by completing the self-report instrument. The researcher informed the students of the purpose of this study, as well as how the results would be used. The students were informed that participation was voluntary and not asked to provide their names. The data collection took approximately 10 to 15 minutes for each class section. The number of entirely completed surveys also dropped the sample size by eight participants (n=145). The results of the surveys enabled the researcher to address the eight research objectives.

Data Analysis

Data analysis procedures for the study were quantitative and descriptive in nature. Correlational tests were performed in order to examine the relationships between differences in variables (Leedy & Ormrod, 2001). Independent samples *t*-tests were performed in order to determine differences between two means (Leedy & Ormrod, 2001). The Statistical Package for Social Sciences (SPSS), version 12.0, was used in data analysis. Data analysis is discussed below based on the sections of the instrument.

Section 1 - Demographic Information

Data collected from the demographic section of the instrument was first compiled in order to aid the researcher in developing a description of the sample. Data were combined to determine the number of males and females in the sample, the age

range and mean age of participants, number of students in each type of listed RSO, and number of students classifying themselves as underweight, at a healthy weight, overweight, or obese. The self-reported heights and weights were used to calculate participants' body mass indexes, which were then classified into ranges (underweight, healthy weight, overweight, or obese). Use of self-reported heights and weights can be prone to recall bias and errors, but have been used frequently in studies within this population (McArthur & Howard, 2001; Schulken, et al., 1997; Hoyt, et al., 2003; DeBate, Topping, & Sargent, 2001; Heatherton, et al., 1995; DiGiacchino, et al., 2001; Snyder, 1997).

The self-reported body descriptions were then compared to the BMI ranges to determine if a significant correlation existed, to address objective one. A crosstabulation was performed in order to examine the association between these two variables, using gender as a layer factor. Tests performed through the crosstabulation procedure were the linear-by-linear association test, Pearson's r , and Spearman's rho (significant at $p \leq .05$).

Pearson's correlation, a bivariate correlation test, was performed to determine if a correlation existed between participation in a RSO and body image dissatisfaction or potential risk for eating disorders, as determined in sections two and three ($p \leq .05$). This test was performed for each RSO, to address objectives four and five. Pearson's correlation coefficient measures how continuous variables are related (Leedy & Ormrod, 2001). This test was performed using the

crosstabulation procedure, using gender as a layer factor in order to differentiate between male and female participants.

Section 2 - Body Image Information

For the seven body image statements, descriptive statistics were first performed on the data collected in order to determine frequencies and percentages of each classification ("Always", "Almost Always", "Sometimes", "Rarely", and "Never") for each statement. Means, minimums, and maximums were also computed for each statement. These descriptive statistics were calculated in order to address objective two. A body image satisfaction score was also calculated for each subject, by totaling all of the body image statement scores together. Individual body image total scores were determined by adding each participant's responses to all seven body image statements. The scores were classified then as 1 (total score=7-13), 2 (total score=14-20), 3 (total score=21-27), or 4 (total score=28-35). The closer that a participant was classified to a score of 1, the more dissatisfied they were considered to be with their bodies, as this indicated that individual answered most frequently "always" or "almost always" to body image dissatisfaction statements.

To assess objective three, an independent samples *t*-test was performed. This test determined whether a significant difference existed between male and female body image mean scores ($p < .05$). A mean body image score was calculated for each participant for the seven body image statements, and these means were compared to gender using the *t*-test.

The body image satisfaction scores were statistically analyzed with the eating behaviors scores calculated in section three, using Pearson's correlation test, to determine if there was a significant correlation between body image and risk for development of eating disorders ($p \leq .05$). Pearson's correlation coefficient, a type of bivariate correlations test, measures how continuous variables are related (Leedy & Ormrod, 2001). This test was performed in order to address objective eight.

Similarly, a Pearson's correlation test was performed between body image satisfaction scores and individual organizational memberships, in order to determine if a significant correlation existed between the two, in order to address objective six ($p \leq .05$). All body image statements were tested individually with RSO memberships using Pearson's correlation tests, in order to determine if a significant correlation existed as well ($p \leq .05$). However, due to the small numbers of participants in specific organizations, correlational results may not be accurate (G.L. Canivez, personal communication, April 12, 2004). Statements with a mean of ≤ 3.00 (for one or both genders) indicated that the majority of participants agreed at least sometimes with the statement. This benchmark was used in order to determine which statements might be significantly associated with gender or participation in a RSO. Crosstabulation procedures were used to perform each Pearson's correlation test, with gender as a layer factor, in order to differentiate between male and female responses.

Section 3 - Eating Behaviors & Attitudes

For the 19 eating behaviors and attitudes statements, descriptive statistics were first performed on the data collected in order to determine frequencies and percentages of each classification ("Always", "Almost Always", "Sometimes", "Rarely", and "Never") for each statement. Means, minimums, and maximums were also computed for each statement. These descriptive statistics were calculated in order to address objective four. An eating behaviors total score was also calculated for each subject, by totaling all of the eating behaviors statement scores together. Individual eating behaviors total scores were determined by adding each participant's responses to all 19 eating behaviors statements. The score was classified then as 1 (total score=19-37), 2 (total score=38-56), 3 (total score=57-75), or 4 (total score=76-95). The closer a subject was classified to a score of 1, the more at risk the subject was considered to be for developing an eating disorder or disordered eating habits, as this indicated that individual answered most frequently "always" or "almost always" to eating behaviors statements.

To assess objective five, an independent samples t-test was performed. This test determined whether a significant difference existed between male and female eating behaviors mean scores ($p < .05$). A mean eating behaviors score was calculated for each participant for the 19 eating behaviors statements, and these means were compared to gender using the t-test.

The eating behaviors total scores were statistically tested with the body image satisfaction total scores calculated in section two, using Pearson's correlation test, to determine if there was a statistically significant correlation between body image dissatisfaction and risk for development of eating disorders ($p \leq .05$). This test was performed in order to address objective eight.

Similarly, a Pearson's correlation test was performed between eating behaviors scores and individual organizational memberships, to determine if a significant correlation existed between the two, in order to address objective seven ($p \leq .05$). All eating behaviors statements were tested individually with RSO memberships using Pearson's correlation tests, in order to determine if a significant correlation existed as well ($p \leq .05$). However, due to the small numbers of participants in individual organizations, correlational results may not be accurate (G.L. Canivez, personal communication, April 12, 2004). Statements with a mean of ≤ 3.00 (for one or both genders) indicated that the majority agreed at least sometimes with the statement. This benchmark was used in order to determine which statements might be significantly associated with gender or participation in a RSO. Crosstabulation procedures were used to perform each Pearson's correlation test, with gender as a layer factor, in order to differentiate between male and female responses.

Summary

An experimental, descriptive research design was used to guide this study, using correlational tests, *t*-tests, and survey research. Data were collected from four sections of a specific course during normal class time using one instrument. One-hundred and forty-five students (79.3% females) enrolled in this class completely finished the self-report instrument. A singular pilot test was performed on the instrument in order to ensure content reliability. Face, content, and construct validity were also discussed for the instrument. Data analysis procedures were quantitative and descriptive in order to address the eight objectives.

CHAPTER 4

Results and Discussion

The purpose of this study was to examine body image satisfaction and eating behaviors of male and female university students, and any potential correlations associated with their involvement(s) with recognized student organizations (RSO) at a mid-sized, rural Midwestern university. The following eight research objectives were addressed:

1. To determine if a significant correlation exists between self-reported height and weight and chosen personal body description (underweight, healthy and normal weight, overweight, and obese) for male and female university students.
2. To examine the satisfaction of male and female university students with their body image.
3. To determine if a significant difference exists for body image satisfaction between male and female university students.
4. To determine the prevalence of potential risk for development of eating disorders among male and female university students.
5. To determine if a significant difference exists for eating behaviors between male and female university students.

6. To determine if a significant correlation exists between body image satisfaction and RSO memberships among male and female university students.
7. To determine if a significant correlation exists between potential risk of eating disorders and RSO memberships among male and female university students.
8. To determine if a significant correlation exists between body image satisfaction and risk for eating disorders among male and female university students.

Sample Demographics

The sample for this study consisted of 145 university students enrolled in four sections of a "Nutrition in a Global Society" course at a Midwestern university. For the data collection, a self-report instrument (see Appendix A) was provided to the students. The majority of the sample was female (n=115, 79.3%; males n=30, 20.7% of sample). Students' mean age was 20.9 years, with a range from 17-43 years. Self-reported heights and weights of participants were calculated into Body Mass Indices ($BMI = \text{weight (kilograms)} / \text{height (meters)}^2$). The average BMI for females was 23.5, which is within the healthy weight range (BMI range for females=15.1-34.9); for males, 25.4, which is just within the overweight weight range (BMI range for males=20-34.7).

Many of the students were involved with recognized student organizations (RSOs). A total of 82 students were in at least one RSO (56.6%) and 63 were not involved in an RSO (43.4%).

Thirty-six (24.8%; 13 males and 23 females) were involved in a Greek organization (fraternity or sorority), 25 (17.2%; six males and 19 females) were involved in an honorary or honor society, 15 (10.3%; three males and 12 females) were involved in a pre-professional organization, 14 (9.7%; four males and 10 females) were involved with some sort of "other" organization, 11 (7.6%; three males and eight females) were on an athletic team (NCAA and/or intramurals), and 10 (6.9%; two males and eight females) were involved in a service organization. However, it must be noted that there is some overlap, as several students recorded that they were involved in more than one organization. Results are organized below according to research objectives.

Results for Research Objectives

Research Objective 1: To determine if a significant correlation exists between self-reported height and weight and chosen personal body description for male and female university students.

In order to sufficiently address this objective, self-reported heights and weights were first obtained from all participants on the self-report instrument used in data collection. These were used to calculate a Body Mass Index value for each subject (weight (kilograms)/height (meters²)). BMI values were then categorized based on if individuals were underweight (BMI<18.5), at a healthy weight (BMI=18.5-24.99), overweight (BMI=25-29.99), or obese (BMI>30) (McArthur & Howard, 2001; Mahan & Escott-Stump, 2000). Participants were also asked

on the instrument to place their current body weight and size under a self-chosen category: underweight, healthy weight, overweight, or obese.

For males, 73.3% felt they had a "healthy weight", 23.3% felt they were "overweight", one participant felt he was "underweight" (3.3%), and none felt they were "obese" (n=0). In actuality, based on the self-reported heights and weights, no males were underweight, 50% are at a "healthy weight" (n=15), 43.3% were "overweight" (n=13), and 6.7% were "obese" (n=2). For female participants, 59.1% felt they were at a "healthy weight" (n=68), 37.4% felt they were "overweight", 1.7% felt they were "underweight" (n=2), and 1.7% felt they were "obese" (n=2). Seventy-nine females were classified at a "healthy weight" using BMI (68.7%), 22.6% were "overweight" (n=26), 5.2% were "obese" (n=6), and 3.5% were "underweight" (n=4).

The BMI calculations for each participant and the self-reported descriptions of body size and weight were then compared to determine if there was any correlation between the two using crosstabulation tests. These tests were performed in order to determine if the students had an accurate perception of their own body weight and size. Using the Pearson's correlation, for males, correlation coefficient=.523 (significance=.003); for females, correlation coefficient=.702 (significance=.0001). Spearman correlations were also tabulated. For males, the value was determined to be .493 (significance=.006); for females, .688 (significance=.0001). Using chi-square linear-by-linear

association tests, the value for males was found to be 7.939 (significance=.005) and for females, 56.220 (significance=.0001). Therefore, according to these tests, the data analyzed determined that the correlation between BMI and self-reported body size and weight descriptions was significant ($p \leq .05$).

University students in this study did have accurate perceptions of their body weight and size, when compared to self-reported heights and weights. These results are inconsistent with those in past research, in which collegiate women tended to perceive their bodies as larger than actuality (Ignacek, et al., 1999; Furnham, et al., 2002; McArthur & Howard, 2001; Williams & Depcik, 2001; Lofton & Bungum, 2001), and men tended to see themselves as smaller than actuality (Lofton & Bungum, 2001). Many of these studies, however, did use BMI silhouettes, rather than self-reported descriptions, in order to compare perceptions to actual BMI (based on self-reported heights and weights in most studies) (Ignacek, et al., 1999; Furnham, et al., 2002; McArthur & Howard, 2001; Williams & Depcik, 2001; Lofton & Bungum, 2001). The inconsistency in results could simply be resulting from a greater awareness among students in a nutrition class of their body weight, size, and BMI, since these areas may be addressed within the class itself. In past studies, researchers have noted that the use of students enrolled in health-related courses may be a limitation because these students may be more interested in health than the general student population (Rabak-Wagener, et al., 1998).

Research Objective 2: To examine the satisfaction of male and female university students with their body image.

This objective was addressed during data collection in the body image section of the self-report questionnaire. Seven statements (Appendix A, section 2, questions 1-7) were provided to the students, and each had to rank how they felt the statement applied to them personally on a five-point Likert-type scale. Statements were considered noteworthy if the mean response for the statement was \leq to 3.00, indicating that the majority of respondents agreed at least "sometimes" with the particular statement. The statements were assessed separately for frequency and percentage statistics, and scores from each statement were then combined to comprise the body image total score. A lower body image total score inferred that the subject had a higher rate of body image dissatisfaction. Below, responses are organized by females and males.

Females (Table 1). For females, all statements except for #7 were considered important, with a mean of less than 3.00 for each statement.

For statement one, "I worry about gaining weight," 31.3% of students stated "always" (n=36), 24.3% stated "almost always" (n=28), 36.5% stated "sometimes" (n=42), 4.3% stated "rarely" (n=5), and 3.4% stated "never" (n=4). The mean response for females was 2.24, indicating that the majority of females were worried about gaining weight. Interestingly, 92.1% of all females surveyed worried about gaining weight at least sometimes.

Table 1

Participant responses to body image (BI) part of instrument: frequencies, means, and total scores.

Score		1-Worry		2-Compare		3-Compare		4-Think		5-Think		6-Not		7-Thoughts	
		Wt	Gain	to	Peers	to	Media	about	Wt	Losing	wt	Satisfied	Interrupt	life	
1-Always	M	6.7%	(n=2)	6.7%	(n=2)	3.3%	(n=1)	13.3%	(n=4)	10%	(n=3)	13.3%	(n=4)	0%	(n=0)
	F	31.3%	(n=36)	28.7%	(n=33)	14.8%	(n=17)	29.6%	(n=34)	35.6%	(n=41)	25.2%	(n=29)	6.1%	(n=7)
2-Almost Always	M	6.7%	(n=2)	10%	(n=3)	10%	(n=3)	4.3%	(n=5)	20%	(n=6)	23.3%	(n=7)	3.3%	(n=1)
	F	24.3%	(n=28)	33%	(n=38)	23.5%	(n=27)	32.2%	(n=37)	30.4%	(n=35)	23.5%	(n=27)	12.2%	(n=14)
3-Sometimes	M	30%	(n=9)	56.7%	(n=17)	26.7%	(n=8)	26.7%	(n=8)	13.3%	(n=4)	30%	(n=9)	13.3%	(n=4)
	F	36.5%	(n=42)	24.3%	(n=28)	35.7%	(n=41)	27.8%	(n=32)	15.7%	(n=18)	31.3%	(n=36)	25.2%	(n=29)
4-Rarely	M	26.7%	(n=8)	13.3%	(n=4)	26.7%	(n=8)	33.3%	(n=10)	16.7%	(n=5)	20%	(n=6)	30%	(n=9)
	F	4.3%	(n=5)	11.3%	(n=13)	17.4%	(n=20)	8.7%	(n=10)	11.3%	(n=13)	15.7%	(n=18)	32.2%	(n=37)
5-Never	M	30%	(n=9)	13.3%	(n=4)	33.3%	(n=10)	10%	(n=3)	40%	(n=12)	13.3%	(n=4)	53.3%	(n=16)
	F	3.4%	(n=4)	2.6%	(n=3)	8.7%	(n=10)	1.7%	(n=2)	7%	(n=8)	4.3%	(n=5)	24.5%	(n=28)
Means	M	3.60		3.17		3.77		3.10		3.57		2.97		4.33	
	F	2.24		2.35		2.82		2.81		2.23		2.50		3.57	
		7-13		14-20		21-27		28-35							
		Points		Points		Points		Points		Points		Points		Points	
Total BI ¹	M	3.3%	(n=1)	16.7%	(n=5)	40%	(n=12)	40%	(n=12)						
Scores	F	28.7%	(n=33)	34.8%	(n=40)	26.1%	(n=30)	10.4%	(n=12)						

¹Combined scores for participants from statements 1-7.

Note: M=Males, F=Females; BI=Body image

Statements two and three were similar, "I compare my current weight and body shape to people around me," and "I compare my current weight and body shape to people in the media."

Thirty-three females, of 28.7%, stated they compare their body to peers "always", 33% stated "almost always" (n=38), 24.3% stated "sometimes" (n=28), 11.3% stated "rarely" (n=13), and 2.6% stated "never" (n=3). The mean response for statement two was 2.35.

Less frequent were comparisons to people in the media; 14.8% stated "always" (n=17), 23.5% stated "almost always" (n=27), 35.7% stated "sometimes" (n=41), 17.4% stated "rarely" (n=20), and 8.7% stated "never" (n=10). The mean response to statement three was 2.82, which is higher than the mean for statement two. Therefore, female students tended to compare their bodies frequently to others, most likely to their own peers.

For statement number four, "I often think about my personal weight," 29.6% stated "always" (n=34), 32.2% stated "almost always" (n=37), 27.8% stated "sometimes" (n=32), 8.7% stated "rarely" (n=10), and 1.7% stated "never" (n=2). The mean response for statement four was 2.81. These results indicated that many females thought about their weight, as 89.6% stated they thought about their weight at least sometimes.

Statement number five addressed student's thoughts about losing weight. For the females, 35.6% "always" (n=41), 30.4% "almost always" (n=35), 15.7% "sometimes" (n=18), 11.3% "rarely" (n=13), and 7% "never" (n=8) thought about losing weight. The mean response for females was 2.23. These results indicated that

the majority of female students surveyed thought about losing weight at least sometimes (81.7%).

For statement six, "I am not satisfied with my current body shape and size," the mean response for females was 2.50, indicating that the majority of females were dissatisfied at least sometimes. Twenty-nine females "always" (25.2%), 23.5% "almost always" (n=27), 31.3% "sometimes" (n=36), 15.7% "rarely" (n=18), and 4.3% "never" were dissatisfied with their body shape and size (n=5). Nearly 50% were dissatisfied always or almost always, with an additional one-third of females dissatisfied sometimes. These results are consistent with literature stating that 66% of young women and 33% of young men are dissatisfied with their bodies (Rabak-Wagener, et al., 1998).

Statement number seven, "Thoughts about my weight, losing weight, and my body shape and size often interrupt my normal daily events", had a mean response of 3.57. Seven females responded "always" (6.1%), 12.2% "almost always" (n=14), 25.2% "sometimes" (n=29), 32.2% "rarely" (n=37), and 24.3% "never" (n=28) felt that thoughts about weight, losing weight, and body shape and size interrupted their daily events. The majority of females did not agree with this statement, with 56.5% responding "rarely" or "never."

Males (Table 1). For the male participants, the only statement that produced a mean response of ≤ 3.00 was number six.

For statement one, "I worry about gaining weight", 6.7% of students stated "always" (n=2), 6.7% stated "almost always"

(n=2), 30% stated "sometimes" (n=9), 26.7% stated "rarely" (n=8), and 30% stated "never" (n=9). The mean response was 3.60.

Therefore, 86.7% of all male students surveyed were concerned they would gain weight only sometimes, rarely, or never. Concern over weight gain was apparently not a major issue for most of the male students, which is the opposite of the female findings in this study.

Statements two and three were similar, "I compare my current weight and body shape to people around me," and "I compare my current weight and body shape to people in the media." For the male participants, 6.7% "always" (n=2), 10% compared "almost always" (n=3), 56.7% compared "sometimes" (n=17), 13.3% compared "rarely" (n=4), and 13.3% "never" compared themselves to their peers (n=4). The mean response for statement two was 3.17. Comparisons to people in the media were even less common for the male students, with 33.3% comparing "never" (n=10), 26.7% comparing "rarely" (n=8), 26.7% comparing "sometimes" (n=8), 10% comparing "almost always" (n=3), and 3.3% comparing "always" (n=1). The mean response was 3.77. Compared to females, males responded less frequently that they evaluated their weight and body shape against peers or people in the media.

Statement four "I often think about my personal weight," had a mean response of 3.10. Approximately 13% responded "always" (n=4; 13.3%), 4.3% stated "almost always" (n=5), 26.7% "sometimes" (n=8), 33.3% responded "rarely" (n=10), and 10% stated that they "never" thought about their weight (n=3). Less

than half of males surveyed (44%) stated they thought about their weight at least sometimes, which is less than the numbers for the female participants.

Ten percent stated they "always" thought about losing weight (n=3), 20% stated "almost always" (n=6), 13.3% stated "sometimes" (n=4), 16.7% stated "rarely" (n=5), and 40% stated they "never" thought about losing weight (n=12). These results could be related to the findings in literature that it may be common for males to desire to gain weight, in terms of muscle mass especially (Lofton & Bungum, 2001). A question concerning wanting to gain weight was not included on the survey; it may be helpful to include in the future. The mean response for statement five was 3.57.

Statement six of the body image section addressed satisfaction with current body shape and size. Four male participants (13.3%) stated they were "always" dissatisfied, 23.3% stated "almost always" (n=7), and 30% stated "sometimes" (n=9). These results are consistent with literature stating that 66% of young women and 33% of young men are dissatisfied with their bodies (Rabak-Wagener, et al., 1998). In this study, 20% stated they "rarely" were dissatisfied with their bodies (n=6), and 13.3% stated "never" (n=4). This statement had a mean response of 2.97 for the male participants. Males surveyed in this study were less likely to be dissatisfied with their bodies than females.

The last of the statements on the body image portion of the self-report instrument was #7, "Thoughts about my weight, losing weight, and my body shape and size often interrupt my normal daily events." For males, the majority did not agree with this statement. Over half of male students stated this occurred "never" (n=16), 30% stated "rarely" (n=9), 13.3% stated "sometimes" (n=4), and only one participant stated this occurred "almost always" (3.3%), and no males indicated this always happened. The mean response for this statement was 4.33.

Total body image scores. The total body image score for each subject was produced by adding the individual scores for statements 1-7 together and classifying the score as a "1" (total score=7-13), "2" (total score=14-20), "3" (total score=21-27), or "4" (total score=28-35). Participants that scored closer to "1" were considered to have the poorest body image out of the sample. Over half of participants scored under 21 points, indicating that poor body image is prevalent among university students surveyed (Table 1). However, there are differences between males and females in this sample. More females were likely to score under 21 points, at 63.5%, compared to the males at 20%. These results are reflected in past research as well, which stated that poor body image is widespread among college or university students, especially females (Prouty, et al., 2002; Schwitzer, et al., 2001; Schulken, et al., 1997; Lofton & Bungum, 2001; Rabak-Wagener, et al., 1998; Turner, et al., 1997).

Research Objective 3: To determine if a significant difference exists for body image satisfaction between male and female university students.

This objective was addressed by comparing calculated mean body image scores for each participant with gender using an independent samples *t*-test. For males, the mean body image score was 3.43; for females, 2.55. The difference between these two scores was determined to be significant using the independent samples *t*-test (significance=.0001). Therefore, females were significantly more likely to have a lower mean body image score than males. This indicated that females had significantly lower body image than males in this study.

In past literature, poor body image has been noted for both females and males. Females are usually associated with a higher rate of body image dissatisfaction, with research stating up to 66% of young women and 33% of young men are afflicted (Rabak-Wagener, et al., 1998). Results from the present study indicated that the difference between males and females may be significant. However, due to the high ratio of females to males, results may not be generalized beyond the sample.

Research Objective 4: To determine the prevalence of potential risk for development of eating disorders among male and female university students.

This objective was addressed during data collection in the eating behaviors section of the self-report instrument. Nineteen statements (Appendix A, section 2, questions 8-26) were provided,

and each student ranked on a five-point Likert-type scale how they felt the statement applied to them personally. The statements were assessed separately for frequency statistics and scores from each statement were then combined to comprise the eating behaviors total score (Table 2). A lower eating behaviors total score inferred that the subject may have had a higher risk of developing an eating disorder.

Statements were considered potentially important if the mean response for the statement was ≤ 3.00 , indicating that the majority of respondents agreed at least "sometimes" with the particular statement. Only one statement qualified for male (mean=2.83) and female (mean=2.40) students, number seven, "I make an effort to eat nutritious foods daily." For the females, 14.8% "always" (n=17), 37.4% "almost always" (n=43), 40.9% "sometimes" (n=47), 7% "rarely" (n=8), and no females stated that they "never" made an effort to eat nutritious foods daily. For males, 13.3% stated they try to consume nutritious foods "always" (n=4), 20% stated "almost always" (n=6), 40% stated "sometimes" (n=12), and 23.3% stated "rarely" (n=7). Only one subject stated that he "never" made an effort to consume nutritious foods daily. These results are somewhat surprising when compared to past research that has found post-secondary students do not follow healthful dietary practices (DeBate, Topping, & Sargent, 2001). However, use of a health-related course may impact the results of this particular statement, as these students may be more

Table 2

Participant responses to eating behaviors (EB) portion of instrument: frequencies, means, and total scores.

Score		1-Eat		2-Eat		3-Ignore		4-Eat		5-Eat		6-Plan		7-Consume	
		not hungry	after full	fullness	more	less	more	less	meals	nutritious foods					
1-Always	M	6.7% (n=2)	6.7% (n=2)	6.7% (n=2)	3.3% (n=1)	0% (n=0)	10% (n=3)	13.3% (n=4)							
	F	3.5% (n=4)	1.7% (n=2)	3.5% (n=4)	3.5% (n=4)	0.9% (n=1)	6.1% (n=7)	14.8% (n=17)							
2-Almost Always	M	20% (n=6)	13.3% (n=4)	6.7% (n=2)	23.3% (n=7)	6.7% (n=2)	16.7% (n=5)	20% (n=6)							
	F	9.6% (n=11)	7.8% (n=9)	6.1% (n=7)	11.3% (n=13)	6.1% (n=7)	13.9% (n=16)	37.3% (n=43)							
3-Sometimes	M	30% (n=9)	26.7% (n=8)	23.3% (n=7)	36.7% (n=11)	26.7% (n=8)	23.3% (n=7)	40% (n=12)							
	F	60.9% (n=70)	38.2% (n=44)	26.1% (n=30)	39.1% (n=45)	27.8% (n=32)	40.1% (n=47)	40.1% (n=47)							
4-Rarely	M	20% (n=6)	30% (n=9)	23.3% (n=7)	20% (n=6)	30% (n=9)	40% (n=12)	23.3% (n=7)							
	F	20% (n=23)	41.7% (n=48)	39.1% (n=45)	36.5% (n=42)	39.1% (n=45)	25.2% (n=29)	7% (n=8)							
5-Never	M	23.3% (n=7)	23.3% (n=7)	40% (n=12)	16.7% (n=5)	36.7% (n=11)	10% (n=3)	3.3% (n=1)							
	F	6.1% (n=7)	10.4% (n=12)	25.2% (n=29)	9.6% (n=11)	26.1% (n=30)	13.9% (n=16)	0% (n=0)							
Means	M	3.33	3.50	3.83	3.23	3.97	3.23	2.83							
	F	3.16	3.51	3.77	3.37	3.83	3.27	2.40							
Score	8-Compare intake at meals	9-Do not want to eat more		10-Restrict currently		11-Restrict last month		12-Upset if do not lose wt		13-Failure if do not lose wt		14-Angry if do not restrict			
		M	3.3% (n=1)	6.7% (n=2)	10% (n=3)	3.3% (n=1)	0% (n=0)	0% (n=0)	6.7% (n=2)						
1-Always	F	5.2% (n=6)	4.3% (n=5)	7% (n=8)	9.6% (n=11)	5.2% (n=6)	3.5% (n=4)	7% (n=8)							
	M	10% (n=3)	3.3% (n=1)	6.7% (n=2)	10% (n=3)	3.3% (n=1)	6.7% (n=2)	0% (n=0)							
2-Almost Always	F	20.9% (n=24)	18.3% (n=21)	16.5% (n=19)	18.3% (n=21)	12.2% (n=14)	14.8% (n=17)	13% (n=15)							
	M	23.3% (n=7)	20% (n=6)	6.7% (n=2)	13.3% (n=4)	10% (n=3)	10% (n=3)	10% (n=3)							
3-Sometimes	F	31.3% (n=36)	32.2% (n=37)	28.7% (n=33)	27% (n=31)	15.7% (n=18)	16.5% (n=19)	19.1% (n=22)							

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4-Rarely	M	26.7% (n=8)	26.7% (n=8)	26.7% (n=8)	13.3% (n=4)	20% (n=6)	16.7% (n=5)	20% (n=6)
	F	27% (n=31)	26.1% (n=30)	19.1% (n=22)	23.5% (n=27)	30.4% (n=35)	23.5% (n=27)	24.3% (n=28)
5-Never	M	36.7% (n=11)	43.4% (n=13)	50% (n=15)	60% (n=18)	66.7% (n=20)	66.7% (n=20)	63.3% (n=19)
	F	15.7% (n=18)	19.1% (n=22)	28.7% (n=33)	21.7% (n=25)	36.5% (n=42)	41.7% (n=48)	36.5% (n=42)
<u>Means</u>	M	3.83	3.97	4.00	4.17	4.50	4.43	4.33
	F	3.27	3.37	3.46	3.30	3.81	3.85	3.70

15-Skip meals
16-Think to compensate 1x/week+
18-Fat monitoring
19-Calorie monitoring

Score	1-Always	M	6.7% (n=2)	6.7% (n=2)	13.3% (n=4)	10% (n=3)	6.7% (n=2)
		F	3.5% (n=4)	7% (n=8)	8.7% (n=10)	8.7% (n=10)	4.3% (n=5)
2-Almost Always	M	0% (n=0)	6.7% (n=2)	10% (n=3)	6.7% (n=2)	3.3% (n=1)	
	F	87% (n=10)	19.1% (n=22)	9.6% (n=11)	19.1% (n=22)	21.7% (n=25)	
3-Sometimes	M	16.7% (n=5)	13.3% (n=4)	20% (n=6)	23.3% (n=7)	23.3% (n=7)	
	F	16.5% (n=19)	36.5% (n=42)	15.7% (n=18)	30% (n=34)	23.5% (n=27)	
4-Rarely	M	13.3% (n=4)	30% (n=9)	26.7% (n=8)	36.7% (n=11)	36.7% (n=11)	
	F	30.4% (n=35)	17.4% (n=20)	20% (n=23)	27% (n=31)	34.8% (n=40)	
5-Never	M	63.3% (n=19)	63.3% (n=19)	30% (n=9)	23.3% (n=7)	30% (n=9)	
	F	40.9% (n=47)	20% (n=23)	46.1% (n=53)	15.7% (n=18)	15.7% (n=18)	

<u>Means</u>	M	4.27	3.97	3.50	3.80	3.80
	F	3.97	3.24	3.85	3.22	3.36

19-37 Points
57-75 Points
76-95 Points

<u>Total EB¹</u>	M	0% (n=0)	6.7% (n=2)	40% (n=12)	53.3% (n=16)
	F	1.7% (n=2)	21.7% (n=25)	53% (n=61)	23.5% (n=27)

¹Combined scores for participants from statements 1-19.

Note: M=Males, F=Females; EB=Eating behaviors

interested in health and nutrition than the general student population (Rabak-Wagener, et al., 1998).

The total eating behaviors scores were determined to have a mean score of 3.08 out of four. Only 29 out of 145 students (21.4%) had overall score of less than 57, indicating that, overall, the majority of students surveyed had a low risk for developing an eating disorder. The majority of the students with an overall score of less than 57 were female, at 93.1% of these high-risk students. Over one-fifth of students were determined to be at high-risk, and may classify under the subclinical or EDNOS category for eating disturbances. These results are somewhat consistent with current statistics indicating that 25-70% of university students display subclinical eating behaviors, and that 10-20% may display eating disturbances (Hoyt, et al., 2003; Schwitzer, et al., 2001; Nelson, et al., 1999).

Research Objective 5: To determine if a significant difference exists for eating behaviors between male and female university students.

This objective was addressed by comparing calculated mean eating behavior scores for each participant with gender using an independent samples *t*-test. For males, the mean body image score was 3.85; for females, 3.45. The difference between these two scores was determined to be significant using the independent samples *t*-test (significance=.004). Therefore, females were significantly more likely to have a lower mean eating behavior score than males. This indicated that females had significantly

more risk for development of eating disorders than males in this research.

In previous research, collegiate females have been noted to be an at-risk group for developing problematic eating behaviors (Peters, et al., 1996). For males, literature has indicated that disordered eating behaviors are less prevalent (Eliot & Baker, 2001). The results from the present study indicate that this difference between males and females may be significant. However, due to the high ratio of females to males, results may not be generalized beyond the sample.

Research Objective 6: To determine if a significant correlation exists between body image satisfaction and RSO memberships among male and female university students.

Pearson's correlation tests were used to determine if there were significant correlations between body image satisfaction (using body image total scores) and each listed RSO. Individual statements were compared to RSO memberships to determine if a significant correlation existed between the two variables (Table 3). However, it must be noted that due to the small number of participants involved in these organizations, especially when split by genders, the accuracy of the correlational test results is limited (G.L. Canivez, personal communication, April 12, 2004).

Six of the statements were found to have a mean score of ≤ 3.00 for the female students, 1) "I worry about gaining weight", 2) "I compare my current weight and body shape to people

Table 3

Correlations between recognized student organization involvement and body image statements/overall scores and their significance.

		1-Worry Wt Gain	2-Compare/Peers	3-Compare/Media	4-Think about Wt
Greek	M	.096 (p=.613)	.615 (p=.0001) *	.480 (p=.0001) *	.468 (p=.009) *
	F	-.05 (p=.599)	.000 (p=1.00)	-.023 (p=.809)	-.175 (p=.061)
Athletics	M	.000 (p=1.00)	.166 (p=.380)	.229 (p=.224)	.307 (p=.099)
	F	-.002 (p=.986)	-.061 (p=.517)	.016 (p=.865)	-.011 (p=.906)
Service	M	.268 (p=.152)	.089 (p=.641)	.295 (p=.113)	.134 (p=.479)
	F	-.132 (p=.161)	-.125 (p=.184)	-.103 (p=.273)	-.179 (p=.055)
Honorary	M	.072 (p=.707)	.083 (p=.662)	.119 (p=.529)	.042 (p=.826)
	F	.103 (p=.273)	.021 (p=.825)	.072 (p=.444)	.114 (p=.224)
Pre-Prof.	M	.000 (p=1.000)	.166 (p=.380)	.229 (p=.224)	.214 (p=.256)
	F	.025 (p=.791)	-.050 (p=.599)	-.030 (p=.754)	.014 (p=.881)
Other	M	-.197 (p=.298)	-.424 (p=.020) *	-.258 (p=.169)	-.378 (p=.039) *
	F	-.017 (p=.860)	-.069 (p=.465)	-.076 (p=.419)	-.028 (p=.769)
		5-Think Wt Loss	6-Not Satisfied	7-Thoughts/Day	Overall B.I. Score
Greek	M	.252 (p=.178)	.416 (p=.022) *	.270 (p=.149)	.424 (p=.020) *
	F	-.116 (p=.218)	-.102 (p=.279)	-.038 (p=.690)	-.131 (p=.164)
Athletics	M	.054 (p=.775)	-.009 (p=.962)	-.268 (p=.153)	.203 (p=.281)
	F	-.031 (p=.743)	-.058 (p=.536)	-.073 (p=.437)	-.019 (p=.840)
Service	M	.106 (p=.578)	.102 (p=.592)	.107 (p=.572)	.054 (p=.776)
	F	-.086 (p=.360)	-.118 (p=.211)	-.103 (p=.275)	-.125 (p=.157)
Honorary	M	.256 (p=.171)	.054 (p=.775)	.0001 (p=1.000)	.102 (p=.593)
	F	-.010 (p=.914)	.052 (p=.578)	.055 (p=.557)	.060 (p=.525)
Pre-Prof.	M	.054 (p=.775)	.082 (p=.668)	.134 (p=.481)	.203 (p=.281)
	F	-.050 (p=.595)	.075 (p=.424)	-.054 (p=.563)	.006 (p=.952)

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Other	M	-.256 (p=.172)	-.491 (p=.006)*	-.197 (p=.297)	-.399 (p=.029)*
	F	.009 (p=.927)	.028 (p=.767)	-.009 (p=.922)	-.038 (p=.690)

*Significant at $p < .05$

Note: M=Males, F=Females; B.I.=Body Image; Pre-Prof.=Pre-professional organization

around me", 3) "I compare my current weight and body shape to people in the media," 4) "I often think about my current weight", 5) "I often think about losing weight", and 6) "I am not satisfied with my current body size and shape." Only one qualified for the male participants, 6) "I am not satisfied with my current body size and shape."

Greek system members. Twenty-three females and 13 males indicated that they were Greek system members. Greek female participants were not found to be significantly associated with body image dissatisfaction (from total score), with a correlation score of $-.131$ for females ($p=.164$); however, this is a moderate correlation. Fraternity members were significantly associated with body image dissatisfaction, with correlation of $.424$ ($p=.020$).

Sorority and fraternity members were not significantly likely to worry about gaining weight (female correlation= $-.050$, $p=.599$; male correlation= $.096$, $p=.613$). Sorority members were not significantly likely to think about losing weight (female correlation= $-.116$, $p=.218$), or be dissatisfied with current body size and shape (female correlation= $-.102$, $p=.279$).

Interestingly, for Greek males, significant correlation was found for comparison of personal body shape and weight to peers (correlation= $.615$, $p=.0001$) and comparison to those in the media (correlation= $.480$, $p=.007$), especially considering that these statements did not have an overall mean score of less than 3.00 for males. This indicated that the benchmark set was not very

reliable in estimating significant statements. For females, comparison of body and weight was not significant for both peers (correlation=.0001, $p=1.000$) and people in the media (correlation=-.023, $p=.809$). Male fraternity members were also significantly likely to think about their weight (correlation=.468, $p=.009$) and become dissatisfied with their body image (correlation=.416, $p=.022$).

There were several correlations that are considered moderate, which did not reach significance. These include correlation between sorority members and thinking about their weight (correlation=-.175, $p=.061$) and also between fraternity members and allowing disruptive body image thoughts interrupt their day (correlation=.270, $p=.149$).

The results from these correlational tests were surprising, but no research that was found tested specifically fraternity men. However, the results must be interpreted with caution, as the low numbers of both males and Greek participants indicate that results from this study cannot be generalized beyond the sample. Furthermore, due to the low numbers of RSO members for each gender, correlational results may not be an accurate reflection of association (G.L. Canivez, personal communication, April 12, 2004). The results for sorority women are not consistent with those of several past studies. In a study by Schulken and colleagues (1997), researchers determined that sorority women may have greater fear of gaining weight and becoming fat, are more dissatisfied with their bodies, and are

increasingly weight-preoccupied and concerned with dieting than non-Greek college women surveyed in other studies.

Athletes. Eight females and three males identified themselves as athletes. These students were not found to be significantly associated with body image dissatisfaction, for both females and males (female correlation=-.019, $p=.840$; male correlation=.203, $p=.281$). Similarly, athletes did not significantly worry about gaining weight (female correlation=-.002, $p=.986$; male correlation=.000, $p=1.000$), compare their body to peers (female correlation=-.061, $p=.517$; male correlation=.166, $p=.380$), think about their weight (female correlation=-.011, $p=.906$; male correlation=.307, $p=.099$), think about losing weight (female correlation=-.031, $p=.743$; male correlation=.054, $p=.775$), or show dissatisfaction with their body size and shape (female correlation=-.058, $p=.536$; male correlation=-.009, $p=.962$).

Several moderate correlations existed among athletes. Female athletes were moderately correlated with thinking about their weight (correlation=.307, $p=.099$); however, there was a moderate negative correlation found with allowing negative body image thoughts interrupt their days (correlation=-.125, $p=.157$).

Research by Johnson, et al., disputes these results, as they found the majority of male and female athletes they surveyed had high rates of body dissatisfaction, especially related to fat content (1999). The moderate numbers in their study could be simply because these athletes in particular are very confident

with their body image; the number of athletes actually surveyed was small in number, or due to tendency to underreport in this population, as shown in other studies cited by Johnson and colleagues (1999).

Other recognized student organizations. No research was found to date assessing the body image dissatisfaction levels of university students involved in service organization, honor societies, or pre-professional organizations. This study assessed these organizations, as well as an "other" category of organizations. Eight females and two males stated they were in a service organization; 19 females and six males stated they were in an honor society; 12 females and three males stated involvement in a pre-professional organization; and 10 females and 4 males stated they were involved in an "other" organization. None of these organizations were found to be significantly associated with overall body image dissatisfaction for most female and male participants (male service correlation=.054, $p=.776$; female honor society correlation=.060, $p=.525$; male honor society correlation=.102, $p=.593$; female pre-professional correlation=.006, $p=.952$; male pre-professional correlation=.203, $p=.281$; female other correlation=-.038, $p=.690$).

Moderate correlations were found for service male and female members, honor society males, and other males with individual statements. Male service members were moderately correlated with worrying about weight gain (correlation=.268, $p=.152$) and comparing their body to members of the media

(correlation=.295, $p=.113$). Female service members were moderately negatively correlated with thinking about their weight (correlation=-.179, $p=.055$) and worrying about weight gain (correlation=-.132, $p=.161$). Lastly, male "other" members had a moderate negative correlation with thinking about weight loss on a regular basis (correlation=-.256, $p=.172$).

Significant correlations were found between "other" RSO male members and several body image statements; however, all of the correlations were negative. A significant negative correlation was found for body size and shape dissatisfaction (correlation=-.491, $p=.006$), likelihood to compare their bodies to their peers (correlation=-.424, $p=.020$), tendency to think about their weight (correlation=-.378, $p=.039$), and for total body image dissatisfaction (correlation=-.399, $p=.029$). However, these results must be interpreted cautiously. The "other" category was all-inclusive of any organizational type that was not a Greek, athletics, service, pre-professional, or honor society; furthermore, the number of "other" males was small. The small sample indicates that the accuracy of the correlational tests is limited. Therefore, these results cannot be generalized beyond the sample in this study (G.L. Canivez, personal communication, April 12, 2004).

In past research, those in the Greek community and university athletes have been found to be at higher risk for body image dissatisfaction; however, this was mostly not supported by this study. Interestingly, Greek males responded that they

compared their body shapes and weight to a significant degree to both their peers and people in the media, significantly thought about their weight, and were significantly dissatisfied with their body image, based on responses to a singular statement and with total body image scores. Males involved in "other" organizations were significantly satisfied with their body size and shape, significantly did not think about their weight, compared their bodies to peers, and were also significantly satisfied with their body image based on total score. Moderate correlations were discussed as well.

Objective 7: To determine if a significant correlation exists between potential risk of eating disorders and RSO memberships among male and female university students.

Pearson's correlation tests were used to determine if there were significant correlations between the potential risk for developing eating disorders (using eating behaviors total scores) and each listed RSO (Table 4). Accuracy of the correlational test results is limited due to small numbers of participants in recognized student organizations. Individual statements were compared to RSO memberships. Only one statement was a mean of ≤ 3.00 for both male and female participants, #7, "I make an effort to consume nutritious foods daily."

Greek system participants. The total number of Greek system participants in the sample was 36, or 24.8% (13 males, 23 females). Based on the Pearson's correlation test, membership in a sorority or fraternity was not associated with higher risk for

Table 4

Correlations between recognized student organization involvement and eating behaviors statements/overall scores and their significance.

		1-Eat/Not hungry	2-Eat/Full	3-Ignore/Full	4-Eat More/Need
Greek	M	.074 (p=.699)	.086 (p=.652)	.213 (p=.260)	.188 (p=.320)
	F	.016 (p=.864)	.174 (p=.062)	.121 (p=.198)	.014 (p=.881)
Athletics	M	.0001 (p=1.000)	-.047 (p=.804)	.046 (p=.810)	.174 (p=.358)
	F	.053 (p=.574)	.165 (p=.077)	.174 (p=.063)	.037 (p=.698)
Service	M	-.037 (p=.848)	.0001 (p=1.000)	-.037 (p=.847)	-.066 (p=.730)
	F	.095 (p=.311)	.045 (p=.637)	.004 (p=.965)	.000 (p=.997)
Honorary	M	.0001 (p=1.000)	-.213 (p=.259)	-.206 (p=.275)	.031 (p=.872)
	F	.086 (p=.360)	.103 (p=.271)	.013 (p=.894)	.028 (p=.767)
Pre-Prof.	M	-.273 (p=.144)	-.047 (p=.804)	-.046 (p=.810)	-.031 (p=.872)
	F	.101 (p=.282)	.106 (p=.260)	.005 (p=.956)	.076 (p=.418)
Other	M	.027 (p=.888)	.0001 (p=1.000)	-.216 (p=.253)	-.006 (p=.975)
	F	-.017 (p=.860)	.041 (p=.663)	.143 (p=.129)	.158 (p=.092)
		5-Eat Less/Need	6-Plan Meals	7-Nutr.Foods	8-Compare/Intake
Greek	M	-.102 (p=.593)	.237 (p=.208)	-.206 (p=.275)	-.010 (p=.958)
	F	.076 (p=.418)	-.119 (p=.204)	-.074 (p=.431)	-.133 (p=.157)
Athletics	M	-.129 (p=.497)	.262 (p=.162)	.054 (p=.778)	.148 (p=.436)
	F	-.012 (p=.898)	.037 (p=.692)	-.158 (p=.091)	.035 (p=.706)
Service	M	-.009 (p=.961)	-.179 (p=.344)	.086 (p=.651)	-.039 (p=.836)
	F	-.162 (p=.084)	-.060 (p=.527)	.092 (p=.331)	-.057 (p=.548)
Honorary	M	-.281 (p=.132)	.029 (p=.879)	.322 (p=.083)	-.074 (p=.698)
	F	.099 (p=.292)	.025 (p=.792)	.160 (p=.088)	.003 (p=.978)
Pre-Prof.	M	.223 (p=.237)	.165 (p=.384)	.054 (p=.778)	-.049 (p=.796)
	F	.001 (p=.995)	.006 (p=.947)	.028 (p=.769)	.057 (p=.545)

Relationships Among Membership 70

		9-Not Eat More	10-Restrict/Now	11-Restrict/Mo.	12-Upset/No Wt Lost
Other	M	-.324 (p=.081)	-.091 (p=.631)	-.253 (p=.178)	.116 (p=.542)
	F	-.056 (p=.553)	.108 (p=.251)	-.038 (p=.690)	.047 (p=.618)
Greek	M	.263 (p=.160)	.255 (p=.173)	.350 (p=.058)	.042 (p=.827)
	F	-.125 (p=.184)	-.094 (p=.319)	-.021 (p=.826)	-.152 (p=.105)
Athletics	M	.086 (p=.653)	.084 (p=.657)	.047 (p=.806)	-.207 (p=.273)
	F	.000 (p=.998)	-.090 (p=.337)	-.017 (p=.855)	-.072 (p=.444)
Service	M	-.122 (p=.521)	-.203 (p=.282)	-.188 (p=.320)	-.166 (p=.381)
	F	.000 (p=.998)	.063 (p=.503)	-.072 (p=.447)	-.100 (p=.285)
Honorary	M	-.228 (p=.225)	.190 (p=.315)	.211 (p=.263)	.103 (p=.587)
	F	.086 (p=.360)	.052 (p=.585)	.011 (p=.903)	.046 (p=.625)
Pre-Prof.	M	-.105 (p=.582)	.169 (p=.373)	.141 (p=.459)	-.207 (p=.273)
	F	.063 (p=.500)	-.079 (p=.403)	-.010 (p=.914)	.064 (p=.496)
Other	M	.157 (p=.408)	.074 (p=.696)	-.276 (p=.140)	.122 (p=.522)
	F	-.007 (p=.939)	-.108 (p=.250)	-.075 (p=.428)	.105 (p=.264)
		13-Failure	14-Angry/Not Restrict	15-Skip Meals	16-Think to Compensate
Greek	M	.339 (p=.067)	.264 (p=.159)	.086 (p=.653)	.144 (p=.447)
	F	-.115 (p=.221)	-.048 (p=.611)	-.133 (p=.156)	.048 (p=.810)
Athletics	M	-.205 (p=.276)	-.201 (p=.287)	-.019 (p=.919)	-.009 (p=.961)
	F	.023 (p=.807)	.044 (p=.641)	.053 (p=.574)	.057 (p=.548)
Service	M	-.165 (p=.384)	-.161 (p=.395)	.294 (p=.115)	.216 (p=.252)
	F	-.033 (p=.723)	-.090 (p=.336)	-.132 (p=.161)	.028 (p=.770)
Honorary	M	-.036 (p=.849)	.075 (p=.692)	.043 (p=.820)	.125 (p=.509)
	F	.023 (p=.807)	.081 (p=.391)	.113 (p=.231)	.032 (p=.731)
Pre-Prof.	M	-.205 (p=.276)	-.101 (p=.597)	-.019 (p=.919)	.176 (p=.351)
	F	.005 (p=.955)	.032 (p=.730)	-.011 (p=.910)	.022 (p=.813)

Relationships Among Membership 71

		17-Weigh lx/wk+	18-Fat/Monitor	19-Cal./Monitor	Overall E.B. Score
Other	M	-.135 (p=.477)	.030 (p=.877)	-.250 (p=.184)	-.257 (p=.171)
	F	-.012 (p=.897)	.001 (p=.991)	-.037 (p=.691)	.090 (p=.338)
Greek	M	.519 (p=.003) *	.021 (p=.914)	.024 (p=.899)	.334 (p=.072)
	F	.108 (p=.250)	-.037 (p=.695)	-.055 (p=.561)	-.072 (p=.443)
Athletics	M	.368 (p=.046) *	.157 (p=.407)	.241 (p=.200)	.072 (p=.706)
	F	-.005 (p=.960)	-.037 (p=.698)	-.097 (p=.304)	-.007 (p=.944)
Service	M	.196 (p=.296)	.348 (p=.059)	-.048 (p=.800)	-.014 (p=.940)
	F	-.082 (p=.384)	.021 (p=.820)	-.066 (p=.484)	-.054 (p=.567)
Honorary	M	-.061 (p=.748)	.166 (p=.380)	.286 (p=.126)	.108 (p=.571)
	F	.109 (p=.245)	.281 (p=.002) *	.164 (p=.081)	.087 (p=.358)
Pre-Prof.	M	.286 (p=.126)	.065 (p=.734)	.040 (p=.833)	.072 (p=.706)
	F	-.081 (p=.390)	.039 (p=.680)	.033 (p=.729)	.031 (p=.741)
Other	M	-.360 (p=.050) *	-.223 (p=.236)	-.159 (p=.400)	-.180 (p=.342)
	F	.035 (p=.707)	-.048 (p=.612)	.043 (p=.645)	.035 (p=.708)

*Significant at $p < .05$

Note: M=Males, F=Females; Cal.=Calories; E.B.=Eating Behaviors

developing an eating disorder (based on the eating behaviors total score) (female correlation=-.072, $p=.443$; male correlation=.334, $p=.072$). These results are not consistent with previous research that points towards sorority women being at high-risk for developing eating disorders (Schulken, et al., 1997; Alexander, 1998). In a study by Alexander, sorority members were also found to not show significantly more eating disordered behaviors (1998). Similarly, Greek system participation did not predict response to "I make an effort to consume nutritious foods daily" (female correlation=-.074, $p=.431$; male correlation=-.206, $p=.275$). Greek females were not significantly correlated with any other eating behaviors statements. Moderate negative correlations were found between Greek females and comparing intake to others during meals (correlation=-.133, $p=.157$), not wanting to eat more than others at meals (correlation=-.125, $p=.184$), being upset if do not succeed in weight loss (correlation=-.152, $p=.105$), and for skipping meals (correlation=-.133, $p=.156$).

However, fraternity members were significantly correlated with weighing themselves more than once a week (correlation=.519, $p=.003$). Moderate correlations were also found for fraternity members and not wanting to eat more than others at meals (correlation=.263, $p=.160$), restricting food intake currently (correlation=.255, $p=.173$), restricting food intake in the past month (correlation=.350, $p=.058$), feeling like a failure if do not lose weight (correlation=.339, $p=.067$), getting angry at

themselves if do not lose weight (correlation=.264, $p=.159$), and for the overall eating behaviors score (correlation=.334, $p=.072$). The small number of Greek participants in this study limits the generalizability of these results.

Athletes. Eleven total athletes were in the sample, comprising 7.6% of all participants (three males and eight females). Based on the Pearson's correlation tests, athletes were not found to be significantly associated with higher risk for developing eating disorders in this study (female correlation=-.007, $p=.944$; male correlation=.072, $p=.706$). Male athletes were also found to be not significantly more likely to consume nutritious foods daily (correlation=.054, $p=.778$), but females had a moderate, though not significant, negative correlation (correlation=-.158, $p=.091$). Male athletes were significantly correlated with weighing themselves more than one time each week (correlation=.368, $p=.046$). No other significant correlations were found for athletes; however, moderate correlations did exist. Female athletes were moderately correlated with continuing to eat after feeling full (correlation=.165, $p=.077$) and also to ignore feelings of fullness (correlation=.174, $p=.063$). Male athletes were moderately correlated with planning meals ahead of time (correlation=.262, $p=.262$, $p=.162$).

Results of the study by Johnson, et al., also found a small prevalence of eating disordered behaviors among athletes (1999). However, the researchers did note that self-report studies on

athletes in the university population may underestimate actual numbers because of tendency to underreport problems (Johnson, et al., 1999). Therefore, the athletes surveyed may display more disordered eating behaviors than stated.

Other recognized student organizations. No research could be found to date concerning prevalence of eating disturbances in other university organizations. In this study, service, honor society or honorary, pre-professional, and other organizations were assessed as well. Ten of the participants were involved in a service organization (eight females, two males), 25 were in an honor society or honorary (19 females, six males), 15 were in a pre-professional organization (12 females, 3 males), and 14 classified themselves as being in an "other" organization (10 females, 4 males). All four of these groups were found to not be significantly associated with higher risk for development of eating disturbances (female service correlation=-.054, $p=.567$; male service correlation=-.014, $p=.940$; female honor society correlation=.087, $p=.358$; male honor society correlation=.108, $p=.571$; female pre-professional correlation=.072, $p=.706$; male pre-professional correlation=.031, $p=.741$; female other correlation=.035, $p=.708$; male other correlation=-.180, $p=.342$). Participants in these organizations were not significantly correlated with effort for consumption of nutritious foods daily. Honor society female participants were found to be significantly correlated with monitoring fat intake (correlation=.281, $p=.002$); "other" males were significantly negatively correlated with

weighing themselves more than one time per week

(correlation=-.360, $p=.050$).

Moderate correlations were found for service members, honor society members, pre-professional male members, and "other" members. While these results are not significant, they are important to note because they may be important areas to assess in future research. Service females were negatively correlated with feeling they ate less than needed (correlation=-.162, $p=.084$) and skipping meals in order to restrict intake (correlation=-.132, $p=.161$). Male service members were moderately correlated with skipping meals to restrict intake (correlation=.294, $p=.115$) and monitoring fat intake (correlation=.348, $p=.059$). For honor society males, a negative correlation existed for thinking they ate less than needed (correlation=-.281, $p=.132$); a positive correlation existed for attempting to consume nutritious foods daily (correlation=.322, $p=.083$) and monitoring calorie intake (correlation=.286, $p=.126$). Honor society females also had a moderate correlation with attempting to consume nutritious foods daily (correlation=.160, $p=.088$) and monitoring calorie intake (correlation=.164, $p=.081$). Pre-professional male members had a negative moderate correlation with eating when not hungry (correlation=-.273, $p=.144$) and a positive moderate correlation with weighing themselves more than once per week (correlation=.286, $p=.126$). Females involved with "other" organizations were moderately correlated with being

unable to tell when they are full or ignoring those feelings (correlation=.143, $p=.129$).

"Other" males had many moderate negative correlations with eating behaviors statements. They did not feel they ate less than they needed (correlation=-.324, $p=.081$), did not make an effort to eat nutritious foods daily (correlation=-.253, $p=.178$), did not restrict intake over the past month (correlation=-.276, $p=.140$), did not skip meals to restrict intake (correlation=-.250, $p=.184$), and did not think of ways to compensate after overeating (correlation=-.257, $p=.171$).

In past research, those in the Greek community and collegiate-level athletes have been found to be at higher risk for eating disorders; this result was mostly not supported by this study. Male athletes and fraternity members were significantly correlated with weighing themselves more than once a week; however, "other" males were significantly correlated with not weighing themselves this frequently. Female honor society participants were significantly correlated with monitoring fat intake. Many moderate correlations were found and discussed as well. However, due the small numbers in this study, results of the correlational tests have limited accuracy and cannot be generalized beyond this sample (G.L. Canivez, personal communication, April 12, 2004).

Objective 8: To determine if a significant correlation exists between body image satisfaction and risk for eating disorders among male and female university students.

In this study, the eating behaviors total scores were tested using Pearson's correlation test with the body image total score to determine if a significant association existed between the two (Table 5). The correlation was found to be significant for both female (correlation=.753, $p=.0001$) and male participants (correlation=.767, $p=.0001$). Therefore, the overall scores on the body image section of the instrument were strongly correlated with the resulting scores on the eating behaviors section of the instrument. This result is strongly supported by research that indicates poor body image is considered centrally linked to eating disturbances in the university population, and is associated with the risk of developing eating disordered behaviors (Ignacek, et al., 1999; Snyder, 1997).

Summary

The majority of students surveyed, at 79.3%, were females. Most of the participants were also involved in a RSO at the time the survey took place, with the largest number of RSO members being in the Greek system (sororities and fraternities). Students were found to have an accurate perception of their body, when self-reported heights and weights were compared to chosen personal body descriptions. Significant differences were found between male and female mean scores for body image and eating behaviors. For body image dissatisfaction, significant

Table 5

Correlation and significance between body image total score and eating behaviors total score.

	BI ¹ Total Score
EB ¹ Total Score (n=145)	.775 (p=.0001) *
M	.767 (p=.0001) *
F	.753 (p=.0001) *

*Significant at $p \leq .05$

¹BI=Body Image; EB=Eating Behaviors

correlations were found for fraternity members (positive correlations) and "other" male members (negative correlations). For eating behaviors, a significant correlation was found each for fraternity members, male athletes, honor society females, and "other" males. Moderate correlations were discussed as well for RSO memberships and body image and eating behaviors statements. Lastly, a significant correlation was found between eating behaviors and body image total scores, indicating that a lower, more pathological score for one was associated with a lower score for the other. Accuracy of correlational results is limited due to small numbers of participants in individual RSOs.

CHAPTER 5

Summary, Conclusions, and Recommendations

Summary

Many university students, especially females, have been found consistently to display body image dissatisfaction and to be at high-risk for developing disordered eating habits. The atypical eating behaviors most likely shown in this population are the subclinical type, even though DSM-IV diagnosable eating disorders do exist. More recently, studies focusing on males have found that this issue does not just afflict females. Furthermore, specific groups, such as female athletes and sorority women, have found to be potentially at increased risk for these disordered attitudes and behaviors. The prevalence of these issues in the university population makes it an important area to address in research. This study focused on the prevalence of body image dissatisfaction and disordered eating behaviors among university males and females. The purpose of this study was to examine body image satisfaction and eating behaviors of male and female university students, and any potential correlations associated with their involvement with recognized student organizations at a Midwestern university. Eight research objectives were constructed to guide this study:

1. To determine if a significant correlation exists between self-reported height and weight and chosen personal body description (underweight, healthy and

normal weight, overweight, and obese) for male and female university students.

2. To examine the satisfaction of male and female university students with their body image.
3. To determine if a significant difference exists for body image satisfaction between male and female university students.
4. To determine the prevalence of potential risk for development of eating disorders among male and female university students.
5. To determine if a significant difference exists for eating behaviors between male and female university students.
6. To determine if a significant correlation exists between body image satisfaction and RSO memberships among male and female university students.
7. To determine if a significant correlation exists between potential risk of eating disorders and RSO memberships among male and female university students.
8. To determine if a significant correlation exists between body image satisfaction and risk for eating disorders among male and female university students.

In order to address these research objectives, data were collected using a self-report instrument from students in four sections of a "Nutrition in a Global Society" course at the university during April of 2003. The instrument contained three

sections: 1) demographic and personal information, 2) body image dissatisfaction information, and 3) eating behaviors and attitudes information. Data analyzed from section one provided a description of the sample in terms of gender, height, weight, age, involvement in recognized student organizations, and personal body size and shape descriptions. This data found that the majority of students surveyed were female, and many were involved in organizations. The organization type with the most involvement was the Greek system (sororities and fraternities), at nearly 25% of students surveyed. When self-reported heights and weights were compared to personal body descriptions, most students were found to have an accurate depiction of their body size and shape.

The data from section two assessed body image satisfaction of all students surveyed. While many students were found to be afflicted with body dissatisfaction, the only RSO group significantly associated with a higher overall score was fraternity members. Males involved in Greek organizations also had a significant positive correlation with comparing their body shape and weight to their peers and people in the media, thinking about their weight, and being dissatisfied with body shape and size. However, males in "other" organizations had a significant negative correlation with body size and shape dissatisfaction, comparing themselves to their peers, thinking about their weight, and with total body image score. These results were not supported by previous research. Moderate correlations existed as

well, for fraternity and sorority members, male athletes, service members, honor society males, and "other" males. Body image satisfaction among students was found to be strongly correlated to eating behaviors.

Lastly, the data collected from section three addressed eating behaviors and attitudes of the participants. Disordered eating behaviors were found to be less prevalent among the sample than body image dissatisfaction, but still present in some cases. Similarly to body image, no specific RSO groupings were found to be associated with higher risk for developing an eating disorder. Greek males and male athletes were found to be significantly correlated with weighing themselves more than once per week; "other" males had a negative significant correlation with weighing themselves more than once per week. Females involved in honor societies were found to be significantly correlated with monitoring fat intake. However, these results must be interpreted with caution and not generalized beyond this study.

The results of this study indicated that while university students may have an accurate view of their body size and shape, many are dissatisfied. Body image dissatisfaction is an issue more prevalent than disordered eating behaviors. Regardless of past research in the population, sorority members and female athletes in this sample were not found to be associated with higher risk for body image dissatisfaction or disordered eating behaviors. However, a group that may require additional research would be Greek males; results from this study found they were

significantly associated with comparing their bodies to peers and people in the media and also significantly likely to weigh themselves more than once a week. Other organizations with significant correlations were "other" males, honor society females, and male athletes.

Limitations

Several limitations are noted at the completion of this study, including the use of a new instrument, sampling procedure, and breakdown of the sample.

Use of a new instrument is a noted limitation. The instrument had only been used once before, in the pilot study performed by the researcher. The instrument was found to be reliable for the pilot study; however, this does not necessarily mean that the instrument would be reliable in all populations. In order to determine validity (beyond face and content) and further reliability, the instrument would need to be used in future research.

A second limitation is the use of purposive sampling of a convenience sample of university students enrolled in sections of a single course. Furthermore, the sample had a very large female to male ratio (38.3:1). While total sample size was not small, the breakdown for the RSO memberships produced small results for each grouping of males and females. These small numbers limit the accuracy of the correlational tests performed (G.L. Canivez, personal communication, April 12, 2004). Due to these reasons, the study's results cannot be generalized beyond the sample

surveyed. In future studies, researchers may benefit from using larger, more representative samples to more accurately assess these sub-populations of the university community.

Conclusions

Overall, the results of this study indicate that many university students felt significant levels of body image disturbances, but fewer were afflicted with disordered eating behaviors. Both of these areas of disturbance were not found to be significantly correlated with any of the recognized student organization (RSO) groups surveyed, except for several statements and Greek males, male athletes, honor society females, and "other" males, despite previous research placing sorority women and female athletes at potential high risk. Students also appeared to be knowledgeable concerning their body weights and sizes, when comparing self-chosen body descriptors to BMI values (calculated from self-reported heights and weights).

Conclusions for the eight research hypotheses are addressed below.

Hypothesis 1

The first hypothesis stated, there will be no significant correlation found between self-reported height and weight and chosen personal body description (underweight, healthy and normal weight, overweight, and obese) for male and female university students. Based on the data collected, there was a significant correlation between self-reported heights and weights and the personal body descriptions for these students. Therefore,

students in this study appear to have an accurate perception of their personal body weight, shape, and size, indicating the null hypothesis has been rejected.

Hypothesis 2

The second hypothesis stated that there will be no body image dissatisfaction found for male and female university students. Overall, the majority of students were dissatisfied with at least some portion of their body image. Females were, in general, more dissatisfied than males. Therefore, some form of body image concern was common for the students surveyed in this study. Therefore, the results do not support the hypothesis and it must be rejected.

Hypothesis 3

The third hypothesis stated that there would be no significant difference existing for body image satisfaction between male and female university students. However, a significant difference was found between the male and female mean scores. Therefore, the hypothesis is not supported and has been rejected.

Hypothesis 4

The fourth hypothesis stated that there will be no prevalence of potential risk found for the development of eating disorders among male and female university students. Overall, the majority of students in this study were found not to be at risk for development of eating disorders. The only significant issue for the majority of students surveyed in this study was an

effort to consume nutritious foods daily. Therefore, the majority of students were found to not be at risk for development of eating disorders according to the data collected; however, due to a small prevalence, the hypothesis must be rejected.

Hypothesis 5

The fifth hypothesis stated that there would be no significant difference existing for eating behaviors between male and female university students. However, a significant difference was found between male and female eating behaviors meal scores. Therefore, the results do not support the null hypothesis and the hypothesis is rejected.

Hypothesis 6

The sixth hypothesis stated that there would be no significant correlation between body image satisfaction and RSO memberships among male and female university students. While many students were found to be dissatisfied with their body image, the dissatisfaction was significantly associated with only fraternity membership. Greek males were significantly positively correlated with several body image statements. "Other" organization males were significantly negatively correlated with several statements and a significant negative correlation existed between total body image score. Moderate correlations existed for many RSOs. Therefore, the null hypothesis is not supported by results and must be rejected.

Hypothesis 7

The seventh hypothesis stated that there would be no significant correlation between potential risk for eating disorders and RSO memberships among male and female university students. Fraternity members and male athletes were found to be significantly correlated with weighing themselves more than once per week, "other males" had a significant negative correlation with weighing themselves more than once per week, and honor society females were significantly correlated with monitoring fat grams. Many moderate correlations existed for RSOs with other statements. Therefore, the results do not support the hypothesis and it must be rejected.

Hypothesis 8

The last hypothesis stated that there would be no significant correlation between body image satisfaction and risk for eating disorders among male and female university students. Data collected in this study found a strong correlation between body image dissatisfaction and disordered eating behaviors for these students; therefore, students that were found to have the greater body image dissatisfaction were found to also display more eating disordered behaviors and attitudes. Therefore, the results do not support the null hypothesis and it must be rejected.

Recommendations

Based on the results from this study, three recommendations are identified by the researcher. First, the results indicate

that poor body image, and, to a lesser extent, disordered eating behaviors, continue to be widespread among university students. Therefore, it is necessary for university staff and faculty to be aware of the prevalence and promote positive, healthy body images and eating behaviors in the classroom and university surroundings. University staff, faculty, and students also need to have information available for counseling, medical, and nutritional aid for members of the university that need professional guidance regarding body image dissatisfaction or disordered eating behaviors. University health services, counseling centers, dietitians or nutritionists, and community-based services need to be highly visible on campus.

Secondly, effective education programs need to be developed for and implemented in the university community to address body image and eating behavior concerns. A variety of audiences need to be targeted based on results from this and other studies. Body image and eating disorders are issues for both genders, even though they may be more prevalent in females. Programs should be developed that can be used in the classroom, community, and different student organizations. These programs also will need to be evaluated for efficacy. Program efficacy is needed in order to address and diminish (or prevent) body image concerns and eating disordered behaviors within the university population. Despite research from this study, sorority members and athletes may still be at risk and programs that promote positive body

image and eating behaviors may aid in reducing this potential risk.

A body image course was evaluated at one university to assess effectiveness on reducing body image dissatisfaction, weight concern, and disordered eating behaviors (Springer, Winzelberg, Perkins, & Taylor, 1999). This course, called "Body Traps: Perspectives on Body Image," was offered for academic credit and lasted 10 weeks, for two hours each week. Topics covered included body image in the media, historical perspectives, beauty and disgust as agents of evolution, body image development, disability and body image, body image and lifecycle, eating disorders, obesity, and cultural and ethnic differences in body image (Springer, et al., 1999). By measuring body image and disordered eating patterns at the beginning and end of the course, researchers found that students significantly decreased body dissatisfaction and disordered eating (Springer, et al., 1999). While it is unrealistic to recommend that all university students enroll in a course of comparable length, addressing body image and eating behaviors and concerns in a program or course setting can be an effective means of reducing concerns or behaviors.

The last recommendation addresses the need for further research in this area. Future research is needed among different student organizations in order to determine if higher prevalence of body image dissatisfaction and eating behaviors exists, as past research indicates for certain groups. Furthermore, results

from this study indicated that Greek males and, to a lesser extent, honor society females and male athletes, may also be at high-risk for development of body image dissatisfaction and eating disordered behaviors; these populations should be targeted in future research. Results from this study may aid health, counseling, and nutritional services at universities in targeting specific high-risk groups for programming efforts.

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Appendix A

Data Collection Instrument

Faint, illegible text, possibly a table or list of items, located on the right side of the page. The text is too light to transcribe accurately.

Body Image/Eating Behaviors Survey

You are being asked to participate in a study that examines body image satisfaction and eating behaviors of male and female university students. Results of this study will be used for a Master's thesis project at Eastern Illinois University in the School of Family and Consumer Sciences. Your responses to the study will be confidential and will not be attached to your identity in any way. Please be as honest and accurate as you can. Your participation in this study is voluntary and you can withdraw from this study at any time during questionnaire completion, without prejudice.

Thank you for your participation!

Beth G. Cavallero
FCS Graduate Student

Dr. Melanie T. Burns
Thesis Advisor

1. **Gender:** ___ M ___ F
2. **Age:** ____
3. **Height:** ____
4. **Weight:** ____
5. **Personal Memberships in Recognized Student Organizations (check all that apply):**

a. ___ Greek organization	d. ___ Honoraries/honor society
b. ___ Athletic team	e. ___ Pre-Professional organizations
c. ___ Service organization	f. ___ Other (explain: _____)
6. **Overall, choose which you think describes your current body weight and size (check only one option):**

a. ___ Underweight	c. ___ Overweight
b. ___ Healthy weight	d. ___ Obese

Eating Behaviors Survey¹

Read each statement below carefully and rate each on the scale provided. Rate according to how the statement applies to you.

	1=Always	2=Almost Always	3=Sometimes	4=Rarely	5=Never
1. I worry about gaining weight.	1	2	3	4	5
2. I compare my current weight and body shape to people around me.	1	2	3	4	5
3. I compare my current weight and body shape to people in the media.	1	2	3	4	5

¹ Survey adapted from "Eating Behaviors Continuum," McKinley Health Center, University of Illinois at Urbana-Champaign, 1997.

4. I often think about my current weight.	1	2	3	4	5
5. I often think about losing weight.	1	2	3	4	5
6. I am not satisfied with my current body size and shape.	1	2	3	4	5
7. Thoughts about my weight, losing weight, and my body shape and size often interrupt my normal daily events.	1	2	3	4	5
8. I eat when I do not feel hungry.	1	2	3	4	5
9. I usually continue eating even after I feel full.	1	2	3	4	5
10. I have a difficult time telling when I'm full while eating, or ignore my body's fullness cues.	1	2	3	4	5
11. I eat more than I think my body needs.	1	2	3	4	5
12. I eat less than I think my body needs.	1	2	3	4	5
13. I plan what I will eat during meals before they take place.	1	2	3	4	5
14. I make an effort to consume nutritious foods daily.	1	2	3	4	5
15. I compare my food intake to the people I eat food with at meals or snacks.	1	2	3	4	5
16. I do not want to eat more food than the people I eat food with at meals or snacks.	1	2	3	4	5
17. I currently am restricting my usual food intake for the purpose of weight loss.	1	2	3	4	5
18. I have tried, in the past month, to lose weight by restricting my usual food intake.	1	2	3	4	5
19. If I do not succeed when I try to lose weight, I get very upset at myself for a long period of time.	1	2	3	4	5
20. If I do not succeed when I try to lose weight, I feel like a failure.	1	2	3	4	5
21. I feel angry with myself if I do not succeed in my attempts to restrict food intake.	1	2	3	4	5
22. I skip meals in order to restrict food intake and lose weight or change my body shape.	1	2	3	4	5
23. If I eat what I think is a large quantity of food, I think of ways to change my habits so that I do not gain weight.	1	2	3	4	5
24. I weigh myself more than once a week.	1	2	3	4	5
25. I pay close attention to the amount of fat I consume.	1	2	3	4	5
26. I pay close attention to the number of calories I consume.	1	2	3	4	5

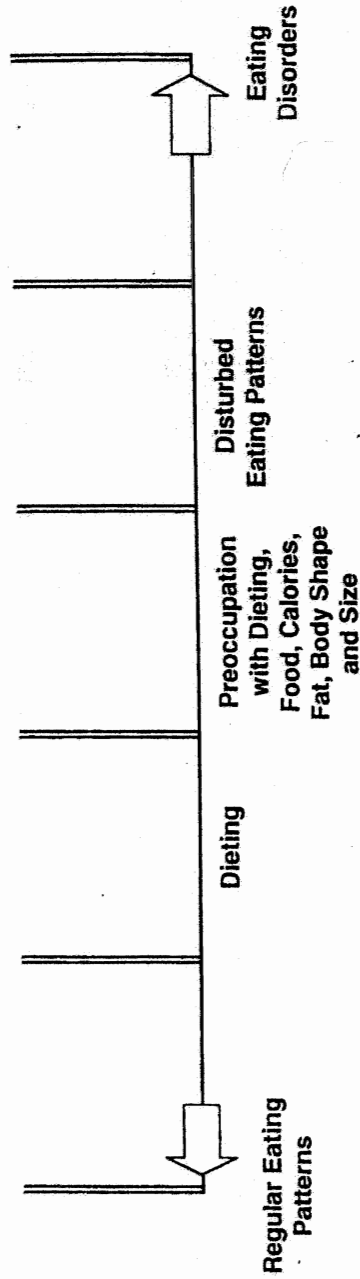
Appendix B

Figure 3: The Eating Behaviors Continuum





The Eating Behaviors Continuum



© University of Illinois, McKinley Health Center, 1997.

(over)

Regular Eating Patterns:

Eating when hungry, stopping when full. At times you may eat more than you need, at times less. You spend some time planning meals, and paying attention to nutrition, but it does not occupy your thoughts.

Dieting:

Restricting your intake for the purpose of weight-loss. This may occur for a short period of time or could occur several times throughout the year.

**Preoccupation with Food,
Dieting, Calories, Weight and
Shape:**

Thoughts about your weight, losing weight and dissatisfaction with your body occupy your mind consistently. Continuous efforts to modify eating habits for weight-loss occur. Frequent berating of self for not being able to change body shape and size occurs.

Disturbed Eating Patterns:

More significant attempts at changing body shape. May include bingeing and purging (fasting, vomiting, over exercise) or more and more severe calorie restriction. Does not meet the clinical criteria to diagnose an eating disorder, but causes significant disruption in the person's life.

Eating Disorder:

Meet criteria for Anorexia Nervosa and Bulimia Nervosa.