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A cross-sectional study comparing the psychosocial correlates for overconcern with body size and shape in men and women

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A CROSS-SECTIONAL STUDY COMPARING THE PSYCHOSOCIAL
CORRELATES FOR OVERCONCERN WITH
BODY SIZE AND SHAPE IN MEN AND WOMEN

A Thesis

Submitted to the Graduate Faculty of
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Master of Arts

in

The Department of Psychology

by
Amy Elaine Rzeznikiewicz
B.A., Colby College, 1997
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Abstract

The purposes of this cross-sectional study were two-fold. The primary aim of this study was to test whether the Muscle Appearance Satisfaction Scale (MASS), a recently developed, reliable, and valid measure of muscle dysmorphia symptoms, measures a parallel phenomenon in men that the Body Shape Questionnaire (BSQ) does in women, i.e., overconcern with body size and shape. To test this aim, psychosocial correlates for overconcern with body size and shape in women were tested to be the same psychosocial correlates for a measure of muscle dysmorphia in men. The psychosocial variables included in this model were body dissatisfaction, negative affect, internalization of the thin and muscular cultural ideals, low self-esteem, history of weight-related teasing, and BMI. The sample consisted of 204 volunteers, with men ($n = 80$) and women ($n = 124$) represented. All participants were 18 years of age or older (mean age = 21.34, $SD = 3.34$). The results indicated that women scored higher on the BSQ than men, and conversely men scored higher on the MASS in comparison to women. Additionally, the pattern of correlations differed between MASS scores and the psychosocial variables for men, and the pattern of correlations between BSQ scores for women with the same psychosocial variables. Of the variables tested, only internalization of cultural body ideals and body size dissatisfaction were significantly correlated with men's scores on the MASS. Negative affect was also significantly correlated with men's MASS scores, but depression symptom severity was not. Evidence from this study did not support the hypothesis that the MASS measures the same construct in men that the BSQ measures in women, i.e., an overconcern with body size and shape. Therefore, continued research to identify or develop a measure of concern for body size and shape that is valid for men is needed, in order to effectively compare men and women on this construct.

Introduction

There have been many studies concerning body image disturbances in women, with an emphasis on those women diagnosed with an eating disorder. Recently, researchers have begun to study body image disturbances in men. The scientific literature on body image disturbances in men is small in comparison to the literature pertaining to women. There are several reasons for the paucity of data on body image disturbances in men. Since eating disorders occur in approximately .5-3% of women, and only one tenth of that for men, most studies of eating disorders and body image have not included men. Furthermore, until recently there were no valid or reliable measures of body image disturbance for men. The scientific community has only recently recognized the impact that society's increasingly muscular and lean body ideal may have on men (Pope, Gruber, et al., 2000).

As several researchers have noted, there is an increasing number of men who are concerned with the size and/or shape of their bodies, specifically their muscularity (Cash 1997; Mayville, Williamson, White, Netemeyer, & Drab, 2002; Edwards & Laudner, 2000). Recent studies have suggested that men may suffer from a "reverse anorexia" more commonly referred to as muscle dysmorphia (Pope, Katz, & Hudson, 1993; Pope, Gruber, Choi, Olivardia, & Phillips, 1997; Pope, Phillips, et al., 2000). Muscle dysmorphia, once referred to as "bigorexia" and "reverse anorexia nervosa", has been classified as a subtype of body dysmorphic disorder (BDD; Pope et al., 1993; Olivardia, 2001; Pope, Phillips, et al., 2000; Pope et al., 1997, Pope, Olivardia, Gruber, & Borowiecki, 1999; Phillips, O'Sullivan, & Pope, 1997). BDD is a psychiatric disorder characterized by the preoccupation with a slight or imagined defect in a specific aspect of appearance (e.g., nose, skin, hair), which causes significant distress in some area(s) of life functioning (Phillips et al., 1997). The full DSM-IV-TR diagnostic criteria are

summarized in Table 1 (American Psychiatric Association, APA, 2000). In muscle dysmorphia, the essential characteristic is a pathological preoccupation with the perception that one's body is not sufficiently muscular or lean (Olivardia, 2001; Pope, Phillips, et al., 2000; Olivardia, Pope, & Hudson, 2000; Phillips et al., 1997; & Pope et al., 1997). While muscle dysmorphia is not included in the DSM-IV-TR, the outlined diagnostic criteria used by mental health professionals are summarized in Table 2 (Olivardia, 2001; Pope, Phillips et al., 2000).

Table 1: Summary of the Diagnostic Criteria for Body Dysmorphic Disorder

- A. Preoccupation with an imagined defect in appearance. If a slight physical anomaly is present, the person's concern is markedly excessive.
 - B. The preoccupation causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
 - C. The preoccupation is not better accounted for by another mental disorder (e.g. dissatisfaction with body shape and size in Anorexia Nervosa).
-

Several studies have suggested that muscle dysmorphia is similar to eating disorders in many ways (Olivardia et al., 2000; Olivardia, 2001; Pope et al., 1993; Pope et al., 1997). Both disorders involve severe body size and shape dissatisfaction, which then lead to extreme behaviors aimed at resolving this dissatisfaction, such as abnormal eating patterns, excessive exercise, and social isolation (Pope et al., 1997). Evidence suggests that eating disorders may stem from sociocultural expectations of a thin ideal body size and shape (Pope et al., 1993, Stice, 2002a). It has been well documented in the literature that concern about body size and shape is the most highly supported psychosocial risk factor and core symptom for eating disorders in women (Cooley & Toray, 2001; Kaye, Strober, & Rhodes, 2002; Cooper, Taylor, Cooper, &

Table 2: Summary of the Diagnostic Criteria for Muscle Dysmorphia

- A. The person has a preoccupation with the idea that his or her body is not sufficiently lean and muscular.
 - B. The preoccupation causes clinically significant distress or impairment in social, occupational, or other important area of functioning as demonstrated by at least two of the following:
 - 1. The individual frequently gives up important social, occupational, or recreational activities because of a compulsive need to maintain his or her workout and diet schedule.
 - 2. The individual avoids situation in which his or her body is exposed to others, or endures such situations only with marked distress or intense anxiety.
 - 3. The preoccupation about inadequacy of body size or musculature causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
 - 4. The individual continues to work out, diet, or use performance-enhancing substances despite knowledge of adverse physical or psychological consequences.
 - C. The primary focus of the preoccupation and behaviors is on being too small or inadequately muscular, and not on being fat, as in anorexia nervosa, or on other aspects of the appearance, as in other forms of BDD.
-

Fairburn, 1987; Strong, Williamson, Netemeyer, & Geer, 2000). As Stice (2002a) noted in his review of the literature, there have been several empirically supported psychosocial risk factors identified for eating disorders, some of which include body dissatisfaction, negative affect, and the internalization of a thin cultural ideal. Researchers have also identified low self-esteem (Garner, Vitousek, & Pike, 1997; Cooley, & Toray, 2001; Gual et al., 2002; Johnson, & Wonderlich, 1992; Kearney-Cooke, & Striegel-Moore, 1997; Smolak, & Levine, 2001; Strong et

al., 2000; Womble, Williamson, Netemeyer, & Netemeyer, 1998) and weight-related teasing (Thompson, Cattarin, Fowler, & Fisher, 1995; Stice, 2002b) as predictive risk factors for eating disorders.

While muscle dysmorphia, like other forms of BDD, has gone unrecognized in the literature and in psychiatric settings, recent studies have suggested that BDD may be relatively common as compared to other psychiatric disorders (Grant, Kim, & Crow, 2001; Phillips, 1991; Phillips & Dufresne, 2000). Individuals with BDD have been found to have severe academic, occupational, and social impairment, as well as high rates of attempted suicide (Garcia-Parajua, Martinez, Ovejero, & Cabellero, 2003; Grant et al., 2001; Phillips, 1991; Phillips & Dufresne, 2000; Phillips & Dufresne, 2002; Phillips et al., 1997;). In one study of 47 patients diagnosed with BDD, 8.5% had made a suicide attempt (Cilli, 2002). As a form of BDD, muscle dysmorphia may also share these severe consequences, and therefore identifying the predictive risk factors for disorders like muscle dysmorphia is an important and logical next step in the research process. Considering the overlap and similarity between the symptoms and behavioral manifestations of muscle dysmorphia and overconcern with body size and shape, as found in eating disorders, it is viable to suggest that these disorders may also share a common etiology, as suggested by common psychosocial correlates (Blouin & Goldfield, 1995; Pope et al., 1997; Olivardia et al., 2000). Further, considering the sex distinction between the female dominated eating disorders and the male dominated muscle dysmorphic disorder, sex may help determine which type of concern with body size and shape develops in the individual, when specific risk factors are present.

Individuals with muscle dysmorphia are preoccupied with thoughts about their lack of muscularity on an average of more than five hours a day, while some individuals report being

bombarded with such thoughts every second of the day (Pope, Phillips, et al., 2000). Other behavioral features associated with muscle dysmorphia include excessive hours spent working out (e.g., lifting weights) and adhering to strict diet plans (Olivardia, 2001; Pope, Phillips, et al., 1997; Pope et al., 2000). For example, individuals with muscle dysmorphia will often neglect or abandon important social, occupational or recreational activities and or responsibilities, in order to avoid interfering with their rigid diet and exercise regimens, for fear that they will become even smaller (Olivardia, 2001; Pope, Phillips, et al., 2000; Pope et al., 1997). Excessive mirror checking is also common, with an average number of times checking of 9.2 times per day, and up to 50 times a day in some cases (Pope, Phillips, et al., 2000). It has been found that individuals with muscle dysmorphia experience high levels of shame about their bodies (Pope, Phillips, et al., 2000; Pope et al., 1997; Olivardia, 2001). Due to the shame and embarrassment felt by these individuals, they will avoid situations in which they might have to expose their bodies (e.g. at the beach or in the locker room). When the situation cannot be avoided the individual will often endure extreme anxiety and/or attempt to hide their body under layers of clothing, even on the hottest of days (Pope, Phillips, et al., 2000; Olivardia, 2001; Pope et al., 1997).

Prevalence of Muscle Dysmorphia

Olivardia (2001) noted that while the prevalence of muscle dysmorphia is relatively unknown, research has provided some insight into this issue. In one study that included 193 men and women diagnosed with BDD, 18 (9.3%) had muscle dysmorphia, and all were male (Pope et al., 1997). Olivardia (2001) also noted that if at least one million men in the United States have BDD, and approximately 9% of men with BDD have muscle dysmorphia, then as many as 90,000 men with BDD might have muscle dysmorphia. In another study designed to examine

steroid use in 38 women bodybuilders, 32 (84%) reported severe preoccupations with being muscular and lean, which lead to impaired social or occupational functioning (Pope et al., 1997). A study by Pope, Katz and Hudson (1993) comparing male bodybuilders who use anabolic steroids to those who do not, found that 9 (8.3%) out of 108 bodybuilders met criteria for "reverse anorexia", now known as muscle dysmorphia. It has also been suggested that muscle dysmorphia is more prevalent in men than in women (Pope et al., 1997; Pope et al., 1999; Olivardia, 2001).

There are several issues that have made the prevalence of muscle dysmorphia difficult to estimate. Muscle dysmorphia may go unrecognized, even in clinical settings. For example, in one study of adult psychiatric inpatients, 16 (13.1%) of 122 subjects met DSM-IV diagnostic criteria for BDD, but none had been diagnosed by their treating physician (Grant et al., 2001). Therefore muscle dysmorphia, a subtype of BDD, may also be going unrecognized as well. In that same study by Grant and colleagues (2001), all 16 subjects stated that they would not divulge their body concerns to their physician without being asked, due to the shame they have about their body appearance. Since individuals with muscle dysmorphia are often ashamed or embarrassed about the appearance of their bodies, many individuals may not seek professional help. It has been noted in the literature that there is a need for more research on the epidemiology and etiology of muscle dysmorphia to determine empirically based prevalence rates (Pope et al., 1997; Olivardia, 2001; Pope, Phillips, et al., 2000).

Similarities Between Muscle Dysmorphia and Eating Disorders

The phenomenology of muscle dysmorphia has been compared to that of eating disorders (Olivardia et al., 2000; Pope et al., 1997; Pope et al., 1993). In fact, many individuals diagnosed with muscle dysmorphia have a past history of an eating disorder. In a study comparing 32

female bodybuilders diagnosed with muscle dysmorphia, 15 (47%) had a history of an eating disorder (Pope et al., 1997). In another study, 29% of the men with muscle dysmorphia reported a history of an eating disorder (Olivardia et al., 2000). In addition to these findings, the men with muscle dysmorphia scored similarly to individuals with eating disorders on all scales of the Eating Disorder Inventory (EDI), an assessment tool used to examine eating disorder symptoms. Another reliable and valid measure of eating disorder symptoms is the Multifactorial Assessment of Eating Disorders (MAEDS; Anderson, Williamson, Duchmann, Gleaves, & Barbin, 1999). The MAEDS, along with self-reports of eating disorder history, was used in this study to assess for the presence of eating disorder symptoms. Olivardia (2001) suggested that while women with eating disorders desire to lose weight in order to achieve thinness, men with muscle dysmorphia are more concerned with a low percentage of body fat, and desire to gain weight in the form of lean muscle mass.

Some behavioral similarities between individuals with eating disorders and those with muscle dysmorphia include the compulsive nature of diet and exercise practices. As Pope and his colleagues (1997) noted, individuals with muscle dysmorphia that were prevented from lifting weights for just one day, became extremely anxious and irritable. Another man with muscle dysmorphia spent an average of three hours just planning and preparing for his meals (Pope et al., 2000). Another man lost his job because he would take three hour lunch breaks to work out at the gym (Pope et al., 2000). In a study on male bodybuilders, 81% reported that they are sometimes to always preoccupied with food, which is well documented phenomenon for eating disordered individuals as well (Anderson, Bartlett, Morgan, & Brownell, 1995; APA, 2000; Beumont, 2002). Hiding or camouflaging their body with layers of clothes is also common to both muscle dysmorphia and eating disorders (Pope et al., 1997).

Affective similarities also appear to exist between individuals with muscle dysmorphia and those with an eating disorder. For example, in one study 58% of men with muscle dysmorphia had a history of mood disorders (Olivardia, 2001). Current and past mood disorders are also common in individuals with eating disorders (APA, 2000; Johnson & Wonderlich, 1992; Anderson, 2002). In a direct comparison between eating disorders and body dysmorphic disorder (Rosen & Ramirez, 1998), the women with eating disorders in that study were more preoccupied with overall body weight and body shape, while the men with BDD were preoccupied with different areas of their body. However, both groups were found to have equally severe levels of body image disturbance and low self-esteem. Since muscle dysmorphia, a form of BDD, is specifically associated with a form of body image concerns, a preoccupation with perceived lack of muscularity, it is likely that the focus of their worry would be more similar (e.g., weight and body shape) to those of women with eating disorders than was found for BDD (a general body defect worry) in the Rosen and Ramirez (1998) study.

Potential Psychosocial Risk Factors for Muscle Dysmorphia

Definition. Stice (2002a) defined a risk factor as “a variable that has been shown to prospectively predict some subsequent pathological outcome.” Womble and her colleagues (1998) defined a risk factor as a psychosocial variable associated with the disorder of interest, and one that precedes the onset of that disorder. For the purposes of this study, the term “potential psychosocial risk factor” was used in reference to muscle dysmorphia, since this is the first study attempting to identify psychosocial risk factors for muscle dysmorphia, and the data will be limited to a correlational analysis. Once potential risk factors are identified, further research with longitudinal studies can be conducted to determine if the highly correlated variables precede the onset of muscle dysmorphia symptoms.

Overconcern With Body Size and Shape. As Pruzinsky and Cash (2002) note, there are numerous terms used to describe body image concerns, and they are often used interchangeably, (e.g. body image disturbance, body size dissatisfaction, body concern, body esteem, body dysphoria). For the purposes of this study, overconcern with one's body size and shape is the primary construct of interest. Concern with body size and shape in individuals who are either overweight or underweight may not be considered abnormal, since these two conditions are viewed as unhealthy and in contrast to the cultural ideal. On the other hand, overconcern with body size and shape refers to individuals who are within the normal weight range (as defined by a body mass index, BMI, between 18.5 – 25) and have excessive concerns with their body size and shape. In addition, individuals who are underweight and have excessive concerns about their body not being thin enough is also viewed as unhealthy and is considered a form of overconcern with body size and shape. The BSQ is a validated measure of overconcern with body size and shape, and has been used to define individuals with high body dysphoria (Baker, Williamson, Sylve, 1995; Williamson, Perrin, Blouin, & Barbin, 2000; Williamson, Muller, Reas, & Thaw, 1999; Williamson, 1996). Body dysphoria is defined as individuals of normal weight who score highly on the BSQ (Williamson et al., 1999) and therefore body dysphoria is another name of the construct of interest in this study. Elevated scores on the BSQ in normal and underweight female participants were used as an indication of overconcern with body size and shape in this study.

Body image has been defined as “the mental picture and/or attitude that an individual has of the physical appearance of his or her body” (Williamson, Davis, Bennett, Goreczny, & Gleaves, 1989). Cash (1997) described body image as one's personal beliefs, perceptions, thoughts, and feelings about one's body, rather than what one's body actually looks like.

Recently body image has been conceptualized as a form of cognitive bias, and not just as a perceptual process (Smeets & Panhuysen, 1995; Vitousek & Hollon, 1990; Williamson et al., 1999; Williamson, Cubic, & Gleaves, 1993). Williamson and colleagues (1999) suggested that cognitive biases related to body size and shape, are determined by a preoccupation with body size and shape, and not by the symptoms of eating disorders per se. These researchers further postulated that the overconcern with body size and shape which can lead to cognitive biases related to body size and shape, can ultimately lead to disturbed behavior patterns (e.g., excessive exercise, body checking, and restrictive eating). It serves to reason that overconcern with body size and shape in men would also determine a cognitive bias and lead to disturbed behaviors as well (e.g., excessive weight-lifting, as seen in individuals with muscle dysmorphia).

Research studies have found that overconcern about body size and shape is the most highly supported risk factor and core symptom of eating disorders (Cooley & Toray, 2001; Kaye et al., 2002; Cooper, Taylor, Cooper, & Fairburn, 1987; Strong et al., 2000; Williamson, 1996). Body image concerns have been found to distinguish between women with and without an eating disorder (Kaye et al., 2002). The BSQ is a valid measure of overconcern with body size and shape in both clinical and non-clinical populations (Cooper et al., 1987; Williamson et al., 1995). In addition, the BSQ has been found to be highly associated with the development of bulimia nervosa symptoms over a one-year period (Womble et al., 1998).

Another similar but distinctly different construct of interest in this study is body dissatisfaction. Body dissatisfaction has been defined as the discrepancy between a person's current body size and ideal body size (CBS-IBS; Williamson et al., 1993; Williamson, Womble et al., 2000). Body size dissatisfaction has also been found to be a strong predictor of eating disorders (Stice, 2002a) and overconcern with body size and shape (Womble et al., 1998).

Baker, Williamson, and Sylve (1995) found that people who were highly concerned with their body size and shape had more body size dissatisfaction than those who were not overconcerned with their body size and shape. The Body Image Assessment for Obesity (BIA-O; Williamson, Womble et al., 2000) is a reliable and valid measure of body size dissatisfaction (Williamson et al., 1993), and was used to assess the degree of body size dissatisfaction in participants in this study. Since the BIA-O consists of body size silhouettes ranging from very thin to obese, body size dissatisfaction in either direction can be detected. This feature of the BIA-O is important because as studies have shown, while most women prefer a thinner ideal body image (Leit et al., 2000; Pruzinsky, & Cash, 2002; Garner, Garfinkel, Schwartz, & Thompson, 1980), men may prefer either a larger and more muscular or a smaller and leaner ideal (Leit et al., 2002; Leit et al., 2000; Pope, Gruber, et al., 2000; Pope, Phillips, et al., 2000; Pope et al., 1999). One study demonstrated that by age nine, girls and boys differed in their body size and shape ideals, as well as their body satisfaction (Hill, Draper, & Stack, 1994). It is also important to note that body dissatisfaction and concern with body size and shape are not identical constructs. For the purposes of this study, body dissatisfaction, as measured by the BIA-O, was examined as another predictor of overconcern with body size and shape, as was measured by the BSQ for women.

As noted previously, the vast majority of research concerning overconcern with body size and shape has studied women. However, recent literature has suggested that overconcern with body size and shape in men also occurs (Blouin & Goldfield, 1995; Corson, & Anderson, 2002; Drewnowski, Kurth, & Krahn, 1995; Olivardia, 2001; Pope et al., 1999; Pope, Gruber, et al., 2000; Pope, Phillips, et al., 2000; Pope et al., 1997; Pope et al., 1993; Edwards & Laudner, 2000; Mayville et al., 2002). It is important to recognize that body image concerns are not necessarily pathological; only in the severe and extreme cases is it problematic (Olivardia, 2000). It is these

problematic cases of severe overconcern about body size and shape that are the focus of this study. Until the recent development of the MASS (Mayville et al., 2002), there was no reliable and/or valid measure of muscle dysmorphia symptoms. Prior studies have used questionnaires, clinical interviews, or surveys to obtain this information. Since the MASS is a reliable and valid measure of muscle dysmorphia, it was used as the primary measure of overconcern with body size and shape in men, and muscle dysmorphia symptoms. The muscle satisfaction subscale, which is related to satisfaction with one's muscle size and definition, appears to be the subscale most directly related to overconcern with body size and shape. Therefore, correlations of scores on the muscle satisfaction subscale with each of the psychosocial variables measured in this study, were also be examined.

In a study by Tucker (1982), 70% of college males reported being dissatisfied with their body image and desired to be more muscular. Pasman and Thompson (1988) found that while women were more dissatisfied with their bodies than men, male and female weightlifters had equivalent amounts of dissatisfaction about body size and shape. Even males with eating disorders have been showing a trend toward body image concerns equivalent to the high level seen in their female counterparts (Pope et al., 1999; Russell, & Keel, 2002). Pope and colleagues (2000) stated that body image distortions in males with muscle dysmorphia are similar to those of females with an eating disorder. A 1997 survey of American men found that 45% of men were dissatisfied with their muscle tone, which was nearly double the results found from that same survey twenty-five years earlier (Pope, Phillips, et al., 2000). A study by Biby (1998), found a more balanced degree of body size dissatisfaction between undergraduate men and women, with 67% of women and 42% of men reporting some dissatisfaction with their bodies.

Internalization of the Thin and Muscular Ideals. Internalization of an ideal body size and shape has been defined as the cognitive representation of external interactions between the individual and their environment (Kearney-Cooke, & Striegel-Moore, 1997). This phenomenon occurs when cultural body standards (e.g. thin, muscular) appear to originate from the individual rather than from social pressures, and these standards appear attainable. As McKinley and Hyde (1996) suggest, cultural standards provide the ideal from which an individual compares their own body, and when these standards are not met they can cause feelings of shame within the individual. The internalization of cultural body standards is measured by the Objectified Body Consciousness Scale (OBCS; McKinley, & Hyde, 1996; McKinley, 2002). The Body Shame subscale of the OBCS measures the degree of internalization, and was selected as such in this study for both men and women. The OBCS was originally derived from social construction perspectives in feminist theories. The OBCS has been found to be a reliable measure of internalization for men and women (McKinley, 1998; McKinley, 2002; McKinley & Hyde, 1996). According to feminist theories, women's bodies are seen as objects that are to be looked at (Spitzack, 1990), whereas men are evaluated for their minds. However, in modern times, as women are beginning to do almost everything men do (e.g., professionally), the one way in which men can now distinguish themselves from women is through their muscularity (Pope, Phillips, & Olivardia, 2000). Therefore, as men begin to internalize cultural body standards more, and their perception of their current body differs from that standard, they may in turn begin to have more body dissatisfaction and shame associated with their bodies.

The internalization of the thin ideal is a well-supported psychosocial risk factor for eating disorders (Stice, 2002a; Stice, 2002b; Strong et al., 2000), and Kearney-Cooke and Striegel-Moore (1997) suggest that this internalization is the primary pathway to body image disturbance

in women. Research has shown that there has been an increasingly thin ideal body image for women over the last few decades (Leit et al, 2000; Pruzinsky & Cash, 2002; Garner, Garfinkel, Schwartz, & Thompson, 1980). Recent studies have found that the ideal male body size and shape is also changing, it is becoming increasingly muscular and lean (Leit et al., 2002; Leit et al., 2000; Olivardia, 2002; Pope, Gruber, et al., 2000; Pope, Phillips, et al., 2000; Pope et al., 1999). In fact, Pope, Phillips, and colleagues (2000) suggest that muscle dysmorphia is a result of increasing pressure from society for men to be more muscular and lean. The media's representation of the muscular ideal has been illustrated in magazines and films (Pope et al., 1997). One study demonstrated the changing male ideal by looking at the changing male body image as seen through action figures. This study demonstrated that toy GI Joe, Batman, and Star Wars figures have become increasingly muscular and well defined over time (Pope et al., 1999). Research has also shown that the Playgirl centerfold models have become increasingly more muscular over time (Leit et al., 2000). Another study demonstrated that college men exposed to advertisements with muscular men in them had significantly greater discrepancy between their own muscularity and their perceived ideal muscularity than men who viewed neutral advertisements, in other words they had greater dissatisfaction with their body size and shape (Leit et al., 2002).

There are increasing societal and cultural pressures on men to attain a lean and muscular body size and shape (Anderson, 1990; Pope et a., 1999; Pope et al., 1997; Leit et al., 2002; Leit et al., 2000; Olivardia, 2001). However, men in Western cultures are not traditionally supposed to talk or worry about their looks (Pope, Phillips, et al., 2000). Together these two conditions can create an environment for increased body concerns in men as well as feelings of embarrassment and or shame in the men who endorse concerns about their body image, and

therefore internalize their self-criticism (Pope, Phillips, et al., 2000). Just as the internalization of the thin ideal has been shown to be a psychosocial correlate for overconcern with body size and shape in women, as seen with eating disorders, the internalization of the lean and muscular ideal could also be a psychosocial correlate for men with symptoms of muscle dysmorphia.

Negative Affect. In his meta-analytic review of the literature on risk factors for eating disorders, Stice (2002a) found that negative affect is a psychosocial risk factor for eating disorders and body dissatisfaction. Several studies have identified depression as a risk factor for developing eating disorders (Strong et al., 1995; Cooley, & Toray, 2001; Womble et al., 1998). In a confirmatory factor analysis of eating disorder symptoms and other psychopathology, negative affect was found to be one factor that is common across studies (Gleaves & Eberenz, 1993; Gleaves, Williamson, & Barker, 1993; Varnado, Williamson, & Netemeyer, 1995). It has been suggested that experiences of negative affect may increase body image disturbance (Baker et al., 1995). Research has shown a consistent relationship between depression and body dissatisfaction, and the development of BDD (Bidy, 1998; Phillips, 1991), although whether the depression is a risk factor or a product of the BDD is still unclear. Very high rates of both past and current mood disturbances such as major depressive disorder have been found in individuals with muscle dysmorphia. In one study of men with muscle dysmorphia, 43% reported a mood disorder at least one year prior to developing muscle dysmorphia, and 43% reported the mood disorder within the same year as developing muscle dysmorphia. While these percentages do not support a consistent sequence between the onset of muscle dysmorphia and the onset of mood disorders, the relationship is sufficiently strong to justify further investigation.

The terms negative affect and depression have been used interchangeably. Watson and colleagues (1988) define negative affect as a subjective experience of distress and unpleasurable

or aversive moods, including fear, disgust, anger, guilt, contempt, and nervousness. The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is a scale designed to measure both negative and positive affect. Depression is defined by the clinical DSM-IV-TR (2000) diagnostic criteria including depressed mood or loss of pleasure in all or most activities. The Center for Epidemiological Studies' Depression Scale (CES-D; Radloff, 1977) is a reliable and valid assessment of the severity of symptoms of depression in the general population, and it was designed for use in studies looking at the relationship between depression and other factors. The CES-D has been found to have very good discriminant validity among individuals along the continuum of depressive symptoms (Santor, Zuroff, Ramsay, Cervantes, & Palacios, 1995). Since this study was not concerned with the presence or absence of depression, but rather the level of depressive symptoms, the scores on the CES-D were not used to identify cases of clinical depression but rather to identify where subjects fall along the continuum of depressive symptoms. For the purposes of this study, both the PANAS and the CES-D were used to assess negative affect. The PANAS allowed for an examination of the relationship between negative affect and a measure of muscle dysmorphia symptoms. On the other hand, the CES-D was used to distinguish between clinical and non-clinical levels of depressive symptoms related to muscle dysmorphia symptoms.

Low Self-Esteem. Merriam-Webster's Collegiate Dictionary (2002) defines self-esteem as confidence and satisfaction in oneself. In the Handbook of Treatment for Eating Disorders, Garner, Vitousek, and Pike (1997) describe poor self-esteem as a common precursor to the development of an eating disorder. Self-esteem is typically evaluated in clinical settings on the basis of statements made by the individual, expressed in terms of feelings of ineffectiveness, helplessness, or lack of direction (e.g. "I don't feel like a worthwhile person," Garner et al.,

1997). In research settings, self-esteem is commonly measured using the Rosenberg Self-Esteem Scale (Rosenberg, 1965), a scale which has shown consistent reliability over the years.

Therefore, self-esteem was measured with the Rosenberg scale for this study. Research has consistently shown that low self-esteem is associated with or has contributed to the onset of an eating disorder (Cooley, & Toray, 2001; Gual et al., 2002; Johnson, & Wonderlich, 1992; Kearney-Cooke, & Striegel-Moore, 1997; Smolak, & Levine, 2001; Strong et al., 2000; Womble et al., 1998). Blouin and Goldfield (1995) concluded that the positive relationships among low self-esteem, depression, and body dissatisfaction are found in both males and females. In fact, low self-esteem has also been found to have a strong correlation with both negative affect (Lorr & Wunderlich, 1988; Smith & Petty, 1995) and depression (Woods, Lentz, Mitchell, & Oakley, 1994). It has been stated that low self-esteem is a key element in the development of body image disturbance in BDD (Biby, 1998), and one study found equally low levels of self-esteem among eating disorder and BDD subjects (Rosen & Ramirez, 1998). Therefore low self-esteem may also play an important role in the development of muscle dysmorphia, a form of BDD. Pope, Phillips, and Olivardia (2000) suggested that recent studies have shown bad body image to be more strongly connected to low self-esteem in men than in women. In fact, individuals with muscle dysmorphia typically report feelings of low self-esteem (Olivardia, 2002; 2001).

History of Weight-Related Teasing. Recent research has shown that weight related teasing as a child, may be an important factor in the development of eating disorders (Thompson, Cattarin, Fowler, & Fisher, 1995). For that reason, Thompson and colleagues developed the Perception of Teasing Scale to be used to measure the effect of weight-related teasing. High correlations were found between teasing frequency, body image, and eating disturbance. There is evidence that teasing about weight by peers predicts increased dissatisfaction with body size

and/or shape and eating disturbance (Neumark-Sztainer, Falkner, Perry, Hannan, & Mulert, 2002; Stice, 2002b). One study looking at the associations of weight-based teasing in adolescents (Eisenberg, Neumark-Sztainer, & Story, 2003) found that teasing about weight was associated with low body satisfaction, low self-esteem, and depressive symptoms. Childhood teasing about appearance has also been listed as a potential risk factor for BDD (Phillips, 2002). As a form of BDD, teasing about lack of musculature or weight could also be a potential psychosocial risk factor for muscle dysmorphia. Men with muscle dysmorphia have reported a history of teasing and or harassment about being either overweight or underweight (Olivardia, 2001). For that reason, the wording of select items of the POTS-R-WT was changed in an effort to reflect weight-related teasing in either direction (e.g., teasing for being either overweight or underweight). For example, instead of the original item, which read, “People made fun of you because you were heavy,” the words “because you were heavy” were replaced with “because of your body size or shape”. Olivardia (2001) suggests that men who are teased about their weight become preoccupied with their physical appearance and physique in an effort to stop the harassment, which may potentially predispose these men to developing muscle dysmorphia

Theoretical Model to be Tested

The proposed model of correlations for men's MASS scores was derived from prior research in the area of eating disorders in women. The most highly supported psychosocial risk factor and core symptom of eating disorders in women is overconcern with body size and shape (Cooley & Toray, 2001; Kaye, Strober, & Rhodes, 2002; Cooper, Taylor, Cooper, & Fairburn, 1987; Strong, et al., 2000). The BSQ is a consistent and valid measure of overconcern with body size and shape in women. It was proposed here that the MASS measures this same construct in men. Men's and women's body image concerns differ (Olivardia, 2001), with women preferring

an extremely thin ideal and men preferring a lean and muscular ideal body size. The items on the BSQ appear to be more relevant to the body size and shape concerns of women, (e.g., "Have you worried about your thighs spreading out when sitting down?" and "Have you thought that your thighs, hips, or bottom are too large for the rest of you?"). Likewise, items on the MASS appear to be more relevant to the concerns of men (e.g., "I am satisfied with the size of my muscles."). Therefore, the BSQ was used as a measure of overconcern with body size and shape in women, and the MASS was proposed to be a measure of this same construct in men.

Body dissatisfaction is the discrepancy between one's perceived current body size and ideal body size (Williamson et al., 1993; Williamson, Womble et al., 2000). Body size dissatisfaction has been found to be one of the strongest predictors of overconcern with body size and shape (Baker et al., 1995; Womble et al., 1998). Another psychosocial variable associated with overconcern with body size and shape and with body size dissatisfaction is negative affect (Stice, 2002a; Stice & Ragan, 2002; Womble et al., 1998). Low self-esteem has also been found to have a strong connection to both negative affect (Lorr & Wunderlich, 1988; Smith & Petty, 1995) and depression (Woods, Lentz, Mitchell, & Oakley, 1994). Since it is difficult to separate low self-esteem from negative affect, these two constructs were conceptualized together in this model.

In turn, several other psychosocial factors have been found to be highly associated with body size dissatisfaction and overconcern with body size and shape. Elevated body mass, indicated by a high BMI, has been shown to predict increased body dissatisfaction (Cattarin & Thompson, 1994; Stice, 2002a), and weight concerns (Taylor et al., 1998). In a society with an increasing emphasis on the extremely thin body size ideals for women (Garner et al., 1980; Leit et al., 2000; Pruzinsky & Cash, 2002), it is logical that women who have higher BMI's would

also have more body size dissatisfaction. Another psychosocial variable included in this model is the internalization of the cultural ideal. As individuals internalize the cultural standards as their own, if their perceived body size differs from these unrealistic ideals, their body size dissatisfaction should increase. The internalization of the thin ideal has been well supported as a risk factor for body dissatisfaction (Stice, 2002a) and body image disturbance (Kearney-Cooke & Striegel-Moore, 1997) in prior research.

Finally, weight-related teasing was the last psychosocial variable included in this model. When individuals are teased about their weight as a child/adolescent, attention is drawn to their body size and shape. In an effort to take this negative attention away from the individual, these individuals may become preoccupied with their physical appearance and engage in behaviors aimed at decreasing the harassment (Olivardia, 2001). There is some evidence that teasing about weight predicts increased body size dissatisfaction (Neumark-Sztainer et al., 2002; Stice, 2002b), eating disturbances (Stice, 2002b; Womble et al., 1998), and is associated with increased weight concerns (Taylor et al., 1998). The proposed model is represented in Figure 1.

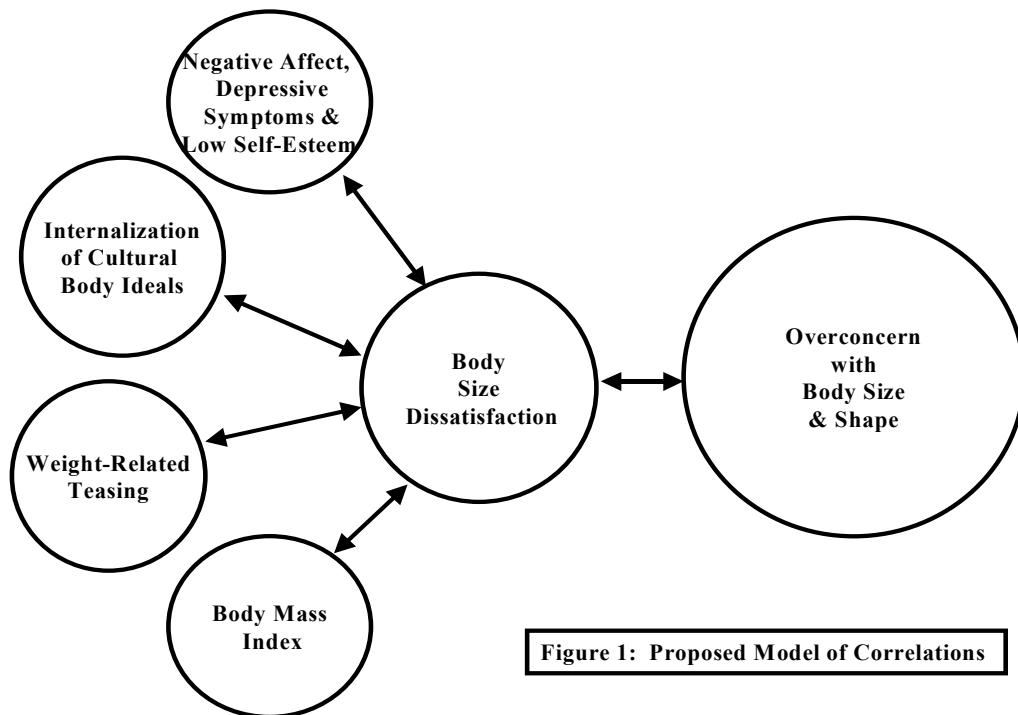


Figure 1: Proposed Model of Correlations

Goals of the Present Study

It was hypothesized that the Muscle Appearance Satisfaction Scale (MASS; Mayville et al., 2002) measures a parallel phenomenon in men that the Body Shape Questionnaire (BSQ; Cooper et al., 1987) measures in women. The MASS is a newly designed, reliable, and valid measure of muscle dysmorphia symptoms for men. The BSQ is a reliable and valid measure of concerns about body size and shape in women. The BSQ has been used in several studies of body image concerns and eating disorders (Baker et al., 1995; Strong et al., 2000; Williamson et al., 1995; Womble et al., 1998; Varnado et al., 1995). The first goal of the present study was to compare scores on the BSQ and the MASS in men and women. The second goal of the present study was to test if empirically supported psychosocial correlates for overconcern with body size and shape in women are the same psychosocial correlates for men with symptoms of muscle dysmorphia. Specifically, the variables of body dissatisfaction, negative affect, low self-esteem, history of weight-related teasing, and the internalization of both the thin and muscular cultural ideals were tested as correlates of overconcern with body size and shape in men and women. Sex differences were also examined to see if sex plays a role in determining the strength and effect of the aforementioned psychosocial correlates. Since this preliminary study is based on cross-sectional correlations between variables, the results of highly correlated variables represent potential risk factors to be studied later in longitudinal designs once the relationship has been established. Specific hypotheses that were tested in this study include the following:

Hypotheses

Primary Hypothesis

The same psychosocial variables [body dissatisfaction, negative affect, internalization of a cultural (thin, muscular) ideal, low self-esteem, history of weight-related teasing, and BMI] that are correlated with overconcern with body size and shape in women, as measured by the BSQ, will be correlated with overconcern with body size and shape in men, as measured by the MASS. The pattern of correlations will not differ for men and women.

Rationale Considering the overlap of behavioral and affective symptoms between the individuals with eating disorders and those with muscle dysmorphia (Olivardia et al., 2000; Pope et al., 1997; Pope et al., 1993), if the MASS does measure overconcern with body size and shape as the BSQ does, then it appears highly likely that overconcern with body size and shape assessed by the BSQ and MASS will correlate highly with these measures for both women and men respectively.

Statistical Method Pearsons' r was used to compute correlations between scores on the BSQ and scores on each of the independent measures (BIA-O discrepancy score, NA and PA scales of the PANAS, CES-D, Body Shame subscale of the OBC, RSES, POTS-R-WT, BMI), and also between scores on the MASS and each of the same independent measures listed above. The magnitude of the correlations related to men and women was compared using r to z transformations.

Secondary Hypothesis 1

Body dissatisfaction, BMI, negative affect, internalization of the cultural (thin) ideal, history of weight-related teasing, and low self-esteem will each significantly contribute to the

total variance in BSQ scores for women, and significantly contribute to the total variance in total MASS scores for men.

Rationale & Statistical Method Tests of this hypothesis are based upon the theoretical model depicted in Figure 1. Body dissatisfaction is the discrepancy between a person's perceived current body size and perceived ideal body size (Williamson et al., 1993). It stands to reason that people who are dissatisfied with their bodies are also concerned with body size and shape in general. Therefore, body dissatisfaction is predicted to be the most highly correlated predictor variable with overconcern with body size and shape. However, all individuals that are excessively concerned about body size and shape are not necessarily dissatisfied with their bodies, and thus these two factors are not the same construct. Therefore, body dissatisfaction was entered in the first step of the hierarchical regression model to control for the amount of variance this factor accounts for in BSQ scores for women and MASS scores for men. When a person perceives their actual body size (as measured with the BMI) as unsatisfactory, this could lead to shame or embarrassment and ultimately an overconcern with their body size and shape. Therefore, to control for BMI, it was entered in the second step of the regression model.

While negative affect and depression have been consistently associated with overconcern with body size and shape, as seen in individuals with both eating disorders and muscle dysmorphia, the order of their relationship has not been fully determined. Low self-esteem has been suggested to be a risk factor for the development of body image concerns in both eating disorders and body dysmorphic disorder (Biby, 1998; Garner et al., 1997). Self-esteem is also strongly associated with negative affect (Lorr & Wunderlich, 1988; Smith & Petty, 1995; Woods, et al., 1994) therefore, negative affect and self-esteem measures were entered together into the third step of the model. The next factor of importance is the internalization of cultural

ideals. The model assumes that an individual who internalizes the cultural body ideal (thin or muscular and lean) as the standard body size and shape, might also be more concerned with their body size and shape. The measure of internalization of cultural body ideals was therefore entered into the next step of the regression model. Following internalization of cultural body ideals, the measure of history of weight-related teasing was entered into the model. When individuals are teased about their body size or shape, this teasing can lead an individual to become self-conscious of their body and could therefore lead to a heightened awareness of or an overconcern with body size and shape. Not everyone who becomes overconcerned with their body size and shape, will have necessarily been teased in their past. However, if an individual was teased, it is logical to predict that this individual could have an increased probability of becoming overconcerned with their body size and shape.

Secondary Hypothesis 2

Women will score higher on the BSQ than men, and conversely men will score higher on the MASS than women.

Rationale The BSQ measures concerns with body size and shape that appear to be more relevant to the concerns women have about their bodies, and therefore men would likely score lower on this measure. Likewise, the MASS measures body concerns related to muscularity, which appears to be more relevant to men's body concerns than women's. Prior research has demonstrated that men typically have a lower mean score on the BSQ than women (Strong et al., 2000). Since the MASS is a new measure, there is limited research, but in the original psychometric study (Mayville et al., 2002), it was suggested that the MASS might be better suited for males, since they are typically more preoccupied with muscle development than females.

Statistical Method ANOVA's were conducted to compare the mean score for men on the BSQ with the mean score for women on the BSQ, and to compare the mean score for men on the MASS with the mean score for women on the MASS.

Secondary Hypothesis 3

Scores on the BSQ and scores on the MASS will not be significantly correlated for men or women.

Rationale The BSQ and the MASS are hypothesized to measure the same construct, however the BSQ is specific to females and the MASS is specific to males, and each measure is not hypothesized to measure the same construct for both males and females, therefore they should not be highly correlated with each other.

Statistical Method Pearson's r was used to compute correlations between scores on the MASS and the BSQ for women, and between scores on the MASS and the BSQ for men. ANOVA's were run to determine if correlations significantly differed from $r = \text{zero}$. A Fisher r -to- Z transformation was computed to compare the magnitude of the MASS and BSQ correlations for men and women.

Secondary Hypothesis 4

For men, the muscle satisfaction subscale scores will be the most highly correlated of the five subscales of the MASS with scores on measures of body dissatisfaction, negative affect, internalization of cultural (both a thin and muscular) ideal, low self-esteem, history of weight-related teasing, and BMI.

Rationale Since the muscle satisfaction subscale is said to measure specific satisfaction with one's own muscle size and definition (Mayville et al., 2002), this subscale appears to be most

similar to the construct of overconcern with body size and shape, however all of the subscales should correlate since each of the subscales measures important aspects of muscle dysmorphia.

Statistical Method Pearson's r was used to compute correlations between participants' scores on each of the independent measures (BIA-O discrepancy score, NA scale of the PANAS, CES-D, Body Shame subscale of the OBC, RSES, POTS-R-WT, BMI) and their respective subscale scores on the MASS.

Secondary Hypothesis 5

For women, scores on the BSQ will be positively correlated with each of the subscale scores of the MAEDS. Conversely, men's scores on the MASS will be positively correlated with each of the subscale scores of the MAEDS.

Rationale Since overconcern with body size and shape has been found to be the best supported risk factor for the symptoms of eating disorders (Cooley & Toray, 2001; Kaye et al., 2002; Cooper, Taylor, Cooper, & Fairburn, 1987; Strong et al., 2000; Williamson, 1996), the MAEDS measures symptoms of eating disorders, and the BSQ and MASS are said to measure overconcern with body size and shape for females and males respectively, these measures should be highly correlated.

Statistical Method Pearson's r was used to compute correlations between scores on the BSQ and the MAEDS for women, and between scores on the MASS and the MAEDS for men.

Summary and Rationale of the Study

In recent years, an increasingly more muscular and lean body image ideal for men has emerged. Studies have also shown that men are becoming more and more concerned with their body size and shape. Muscle dysmorphia is a subtype of BDD, in which the individual has a preoccupation with their perceived lack of muscularity, and it also appears to be more prevalent in men than in women. However, the research on muscle dysmorphia is in its early stages, and little is known about its etiology and epidemiology. Body image concerns in women have been widely studied, primarily in the area of eating disorders. Specifically, overconcern with body size and shape is the strongest psychosocial correlate with eating disorder symptoms. Muscle dysmorphia and overconcern with body size and shape, as found in eating disorders, share common behavioral and psychological similarities. Considering these commonalities, this study investigated whether known psychosocial correlates for overconcern with body size and shape in women, also correlate with a measure of muscle dysmorphia symptoms in men. This study tested whether body size dissatisfaction, negative affect, internalization of the thin and muscular cultural ideal, low self-esteem, and a history of weight-related teasing are correlated with overconcern with body size and shape in men and women. Overconcern with body size and shape was assessed using measures from the MASS and the BSQ. It was hypothesized that the MASS measures a parallel phenomenon in men that the BSQ measures in women, that phenomenon being one related to an overconcern with body size and shape. It was also predicted that the same psychosocial risk factors that are highly correlated with eating disorders and body image concerns in women would also correlate highly with men who have body image concerns such as those seen in muscle dysmorphia. Therefore, the primary purposes

of this study were to compare these two measures of overconcern with body size and shape, and to identify potential psychosocial risk factors/correlates for muscle dysmorphia.

Method

Participants

A total of 206 men and women, aged 18 years or older, volunteered to participate in the study. The participants were recruited from undergraduate psychology courses at a large southern university. Two participants were excluded from the statistical analyses. One female participant was approximately eight months pregnant and therefore met exclusion criteria. Another female participant was excluded due to incomplete assessment measures (her assessment packet did not include the MAEDS). There were a total of 124 females and 80 males who qualified to participate in the study. Extra credit was given for their participation.

Assessment Measures

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988; Appendix A). The PANAS is a two-factor mood scale, with 10 items for each of the two scales, used to measure Positive Affect (PA) and Negative Affect (NA). Watson et al. (1988) found the scales to be highly reliable, (.86 to .90 for PA, and .84 to .87 for NA), valid (.76 to .92), precise, and largely independent measures of positive and negative affect. Items are scored on a 5-point Likert scale ranging from "very slightly" to "extremely." For the present study, the PANAS was selected to identify participants with a negative affect, indicated by participants with higher scores on the Negative Affect items.

Center for Epidemiological Studies' Depression Scale (CES-D; Radloff, 1977; Appendix B). The CES-D is a 20-item self-report questionnaire used to assess the symptoms of depression in the general population, and it was designed for use in studies looking at the relationship between depression and other factors. Items are scored from 0 to 3, with four reverse-scored items. Total scores range from 0 to 60, with higher scores indicating more

depressive symptoms. The CES-D has been shown to have high internal consistency (coefficient alpha ranging between .80 and .90), excellent concurrent validity with clinical and self-report criteria, and good discriminant validity between clinical and general population (Radloff, 1977). The traditional cutoff score of 16 on the CES-D has been shown to overestimate the prevalence of depression in college samples (Santor et al., 1995). However, since this study is not concerned with the presence or absence of depression, but rather the level of depressive symptoms, the scores on the CES-D were not used to identify cases of clinical depression but rather to identify where subjects fall along the continuum of depressive symptoms. In addition to the PANAS, the CES-D was used to assess participants' negative affect in terms of their level of depressive symptoms.

Objectified Body Consciousness Scale (OBCS; McKinley, & Hyde, 1996; Appendix C). The OBCS consists of three, eight-item subscales. According to McKinley et al. (1996), the Body Surveillance subscale measures the extent of viewing one's body as an outside observer; the Body Shame subscale measures internalization of cultural body standards; and the Control Beliefs subscale measures appearance control beliefs. The scales use a 7-point Likert scale, ranging from "1 = strongly agree" to "7 = strongly disagree," and respondents also have the choice of circling "NA" if the item does not apply to them. McKinley (1998, 2002) found the scales to be internally consistent and factorial sound for both men and women (alpha = .76, .79 for Surveillance; alpha = .70, .73 for Body Shame; and alpha = .68, .64 for Control Beliefs, for women and men respectively). The Body Shame score of the OBCS was selected as the measure of the internalization of cultural body standards for both men and women in this study. A lower total Body Shame scale score, represents a higher degree of internalization of cultural body standards.

The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965; Appendix D). The RSES is a 10 item scale used as a general measure of self-esteem. Items are scored on a 4-point scale ranging from “strongly agree” to “strongly disagree.” The RSES has been found to have good test-retest reliability (.85) and has been significantly correlated with peer ratings of self-esteem (Demo, 1985). For the purposes of this study, the RSES was used to identify participants with low self-esteem, with lower scores indicative of lower self-esteem.

Perception of Teasing Scale Revised – Weight Related Teasing Factor (POTS-R-WT; Thompson, Cattarin, Fowler, & Fisher, 1995; Appendix E). The POTS-R is a revision of the original Perception of Teasing Scale (POTS; Thompson & Cattarin, 1992). The 6-item Weight Related Teasing factor contains appearance-related questions about teasing specifically due to elevated body weight/size. Thompson et al. (1995) found a strong correlation between measures of body image and Weight Teasing, ranging from .39 to .48. Good test-retest reliability and internal consistency was also found. The POTS-R-WT was used in this study to assess for a history of teasing related to weight and or body size. Since weight-related teasing can occur in both underweight and overweight individuals, the wording of select items of the POTS-R-WT were changed (e.g., in the statement “People made fun of you because you were heavy,” the words “because you were heavy” were replaced with “because of your body size and/or shape”).

Body Image Assessment-Obesity (BIA-O; Williamson, Womble, Zucker, Reas, White, Blouin, & Greenway, 2000; Appendix F). The BIA-O is a revision of the original Body Image Assessment (BIA; Williamson, Davis, Bennett, Goreczny, & Gleaves; 1989). The BIA-O uses cards (numbered 1 to 18) with silhouettes of male and female body sizes ranging from very thin to obese. The 18 cards (each with a different body size silhouette on it) are shuffled and displayed in random order. Subjects are asked to select the silhouette that most looks like their

current body size (CBS), and the number on the back of the card is recorded. Then the cards are shuffled again, and subjects are asked to select the silhouette that most looks like their ideal body size (IBS), what they would most prefer, and the number on the back of the card is again recorded. The cards are shuffled a final time, and the subjects are asked to select the silhouette that looks like a body size that is realistic for them to maintain over a long period of time (RBS). The discrepancy between the subjects' perceived current body size and perceived ideal body size (CBS–IBS) is a measure of body dissatisfaction. Williamson, Gleaves, Watkins, and Schlundt (1993) demonstrated that the discrepancy between current and ideal body size is a valid measure of body dissatisfaction. The BIA-O has demonstrated good test-retest reliability for both females (.93 for CBS, .77 for IBS, and .85 for RBS) and males (.77 for CBS, .81 for IBS, and .65 RBS). The BIA-O has also shown good convergent validity. Discrepancy scores (CBS–IBS) were positively correlated with scores on the body dissatisfaction scale of the Eating Disorder Inventory-II (e.g., $r = .48$ for females; $r = .56$ for males). For this study, the discrepancy scores between perceived current and ideal body size (CBS–IBS) were used as a measure of body dissatisfaction.

Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987; Appendix G). The BSQ is a 34-item self-report questionnaire used to assess levels of concern about body size and shape, specifically the experience of "feeling fat" (Cooper et al., 1987). The items are all rated on a 6-point Likert scale ranging from "never" to "always." The BSQ has demonstrated good concurrent validity, and was very highly correlated with the Body Dissatisfaction scores on the Eating Disorders Inventory (EDI, Cooper et al., 1987). The BSQ has been validated on both eating disorder and nonclinical participants (Williamson et al., 1995). In a study that examined the factor structure of several assessment measures of dietary restraint, body dissatisfaction, and

body image, a two factor structure was identified, body dysphoria and dietary restraint (Williamson et al., 1995). These researchers found the BSQ to be the best measure for defining a subclinical eating disorder group, since it loaded highly on both factors. Numerous studies have used the BSQ for this purpose (Williamson, Perrin et al., 2000; Baker et al., 1995; Jackman, Williamson, Netemeyer, & Anderson, 1995). The BSQ scores were the primary dependent measure of overconcern with body size and shape for women in this study. The wording of select items of the BSQ was changed for men, (e.g., in the statement "Has being with thin women made you feel self-conscious about your shape," the word "women" was replaced with the word "men"; Appendix H).

Muscle Appearance Satisfaction Scale (MASS, Mayville, Williamson, White, Netemeyer, & Drab, 2002; Appendix I). The MASS is a 19-item self-report measure for the assessment of muscle dysmorphia symptoms (Mayville et al., 2002). The MASS is a 5-factor scale, including the following factors: bodybuilding dependence, muscle checking, substance use, injury, and muscle satisfaction. Mayville et al. (2002) found acceptable internal consistency and test-retest reliability (Cronbach's alpha and test-retest coefficients both $>.70$). The total MASS score, which relates to the complete construct of muscle dysmorphia, will be the primary dependent measure for men in this study. In addition to the total score, scores on the muscle satisfaction subscale will also be analyzed, since this subscale appears most directly related to the construct of overconcern with body size and shape. While the MASS was not found suitable for use with females, Mayville et al (2002) acknowledge that there have been reported cases of women with severe muscle preoccupation, and therefore the MASS was also administered to females in this study, in order to make comparisons to their male counterparts.

Multifactorial Assessment of Eating Disorders Symptoms (MAEDS; Anderson, Williamson, Duchmann, Gleaves, & Barbin, 1999; Appendix J). The MAEDS consists of 6 subscales used to measure 6 symptom clusters central to eating disorders: depression, binge eating, purgative behavior, fear of fatness, restrictive eating, and avoidance of forbidden foods. Anderson et al. (1999) found excellent test-retest reliability for each of the 6 subscales of the MAEDS (depression .90, binge eating .89, purgative behavior .99, fear of fatness .93, restrictive eating .96, avoidance of forbidden foods .94), and satisfactory validity. Since this study was primarily concerned with the presence of eating disorder symptoms, each of the subscale scores was used in this study to assess for the presence of eating disorder symptoms.

Body Mass Index (BMI). The BMI will be calculated based on height and weight measurements taken and recorded at the testing session. BMI will be calculated by converting weight into kilograms (kg) and height into meters (m), using the formula kg/m^2 . BMI is a valid measure of adiposity with acceptable test-retest reliability (Stice & Ragan, 2002). According to BMI classifications, the scores range from <18.5 = underweight, $18.5 - 24.9$ = normal, $25 - 29.9$ = overweight, and >30 = obese. The BMI was included in this study as a measure of participants' actual body size.

Demographic Questionnaire (Appendix K). A demographic questionnaire was developed to assess for important demographic variables. Educational status was rated on a 5-point scale, (1 = Freshman, 2 = Sophomore, 3 = Junior, 4 = Senior, and 5 = Graduate Student). Marital status was assessed using a 4-point scale, (1 = single, 2 = married, 3 = divorced, and 4 = other). Sexual orientation was assessed using the Kinsey scale (Kinsey, Pomeroy, & Martin, 1948). The Kinsey scale asks participants to define themselves as “exclusively,” “predominately,” or “incidentally” heterosexual/homosexual. The scale is rated from 1 =

“exclusively heterosexual”, to 7 = “exclusively homosexual.” Additionally, participants were asked whether or not they belonged to a gym, exercised regularly, lifted weights, ever used nutritional supplements to gain weight, ever taken diet pills, or had ever suffered from an eating disorder, all rated on a 2-point scale (1 = no, 2 = yes). If participants answered “yes” to exercising regularly, lifting weights they were asked to circle the number of days a week they did so (1-7). If a participant answered “yes” to ever suffering from an eating disorder, they were asked to identify which eating disorder (1 = anorexia nervosa, 2 = bulimia nervosa, and 3 = eating disorder not otherwise specified).

Procedure

This study was completed in one testing session. Participants were asked to sign an informed consent form. After consent was obtained, participants completed a demographic questionnaire and the assessment measures described above. Following the completion of the questionnaires, participants' height and weight were measured, recorded, and their BMI was calculated. Finally, participants were debriefed about the purpose of the study and questions and concerns were addressed. This study serves as a preliminary study for a larger longitudinal study to follow by the same author.

Results

Demographic Data

There were 204 men and women who qualified to participate in this study. The women (n = 124) had a mean age of 21.35 years (SD = 3.53; range 18-46) and a mean body mass index of 23.14 (SD = 4.56; range 16.30-52.07). For the women, 100 (80.6%) were Caucasian, 14 (11.3%) were African American, 5 (4%) were Asian, 4 (3.2%) were Hispanic, and 1 (.8%) was Other. The men (n = 80) had a mean age of 21.33 years (SD = 3.05; range 18-38) and a mean body mass index of 26.49 (SD = 5.23; range 16.96-42.38). For the men, 64 (80%) were Caucasian, 7 (8.8%) were African American, 5 (6.3%) were Hispanic, 3 (3.8%) were Other, and 1 (1.3%) was Asian. Demographic information is summarized in Table 3.

Table 3: Demographics By Gender

Variable	Females (n = 124)				Males (n = 80)			
	M	(SD)	N	%	M	(SD)	N	%
Age	21.35	3.53			21.33	3.05		
Race								
Caucasian			100	80.6			64	80.0
African American			14	11.3			7	8.8
Asian			5	4.0			1	1.3
Hispanic			4	3.2			5	6.3
Other			1	0.8			3	3.8
Body Mass Index	23.14	4.56			26.49	5.23		

Overall, the educational breakdown of the total sample (N = 204) was 57 (27.9%) college Freshmen, 40 (19.6%) college Sophomores, 41 (20.1%) college Juniors, 63 (30.9%) college Seniors, and 5 (3%) graduate level students. The majority of the sample was single (N = 192, 94.1%), 8 (3.9%) were married, and 4 (2%) were Other. The overall breakdown of sexual orientation for the sample was 200 (98%) predominantly or exclusively heterosexual, 3 (1.5%) exclusively homosexual, and 1 (.5%) was bisexual.

Participants also reported on various exercise and diet habits: 39 (31.5%) women and 37 (46.3%) men belonged to a gym; 64 (51.6 %) women and 49 (61.3%) exercised regularly; 27 (21.8%) women and 41 (51.3%) men lifted weights regularly; 43 (34.7% women and 21 (26.3%) men have taken diet pills; and 4 (3.2%) women and 41 (51.3%) men have used nutritional supplements to gain weight. A total of 7 participants, 6 (4.8%) women and 1 (1.3%) man, reported having suffered from an eating disorder. A comparison of each of the self-report, socio-demographic variables by gender is summarized in Table 4.

To determine if men and women had significantly different scores on the measures, a MANOVA was computed, using sex as the independent variable, and each of the independent measures (listed above) as dependent variables. Overall, significant differences were found among men and women on each of the dependent measures, Wilks' Lambda = .641, $F(7,196) = 15.663$, $p < .001$. The multivariate $\eta^2 = .36$ indicates 36% of multivariate variance of the dependent variables was associated with sex. Univariate ANOVA's were computed for each of the dependent variables to describe the effects associated with male and female sex status. The univariate ANOVA for the body shame scale of the OBCS was significant, $F(1, 202) = 25.06$, $p < .01$, women had higher levels of internalization of cultural ideals ($m = 4.40$) than men ($m = 5.14$). The univariate ANOVA was also significant for the POTS-R-WT, $F(1, 202) = 13.07$, $p <$

Table 4: Comparison of Men & Women on Socio-demographic Variables (means)

Socio-demographic Variable	Men (n = 80)	Women (n = 124)	χ^2	p
Level of Education	2.62	2.56	1.95	<u>ns</u>
Marital Status	1.15	1.06	2.20	<u>ns</u>
Sexual Orientation	1.24	1.06	6.07	<u>ns</u>
Belongs to a Gym	1.46	1.31	4.56	< .05
Exercises Regularly	1.61	1.52	1.83	<u>ns</u>
Lifts Weights Regularly	1.52	1.22	19.66	< .01
Nutritional Supplements to Gain Weight	1.51	1.03	65.23	< .01
Taken Diet Pills	1.26	1.35	1.60	<u>ns</u>
Ever Suffered from an Eating Disorder	1.01	1.05	1.89	<u>ns</u>

Note. Boldface indicates that the men and women differed significantly on this variable. Refer to the Methods section of this paper and Appendix K for a description of mean values.

.01, men ($m = 11.38$) scored higher on the POTS-R-WT than women ($m = 8.96$). The univariate ANOVA for BMI was significant, $F(1, 202) = 23.34$, $p < .01$, men ($m = 26.49$) had a higher BMI than women ($m = 23.14$). And the univariate ANOVA for the BIA-O discrepancy score (CBS-IBS) was also significant, $F(1, 202) = 11.68$, $p < .01$, women ($m = 2.69$) had a larger discrepancy score than men ($m = .27$). The ANOVA's for negative affect score on the PANAS, the CES-D, and Rosenberg Self-Esteem scale were all nonsignificant. A comparison of mean scores on each of the independent measures for men and women are summarized in Table 5.

Table 5: Comparison of Mean & Standard Deviation Scores for Men and Women

Psychosocial Measures	Men (N=80)		Women (N=124)	
	Mean	SD	Mean	SD
BSQ	58.74	20.78	93.69	31.70
MASS	43.95	13.53	35.69	8.89
BIA-O Discrepancy Score	.27	2.686	1.45	2.20
Body Mass Index	26.49	5.23	23.14	4.56
CES-D	14.06	8.86	12.95	9.35
NA scale of the PANAS	19.46	5.72	20.03	6.51
Rosenberg Self-Esteem Scale	16.74	1.70	16.35	1.56
Body Shame scale of the OBCS	5.14	.99	4.40	1.05
POTS-R-WT	11.38	5.75	8.96	3.80

Note. Boldface indicates the men and women differed significantly on this variable. BSQ = Body Shape Questionnaire; MASS = Muscle Appearance Satisfaction Scale; BIA-O (CBS-IBS) = Discrepancy score between current body size and ideal body size of the Body Image Assessment –Obesity; NA scale of PANAS = Negative Affect scale of the PANAS; CES-D = Center for Epidemiological Studies’ of Depression Scale; OBCS = Objectified Body Consciousness Scale; POTS-R-WT = Perception of Teasing Scale Revised-Weight Related Teasing Factor.

Results By Hypothesis

Primary Hypothesis The same psychosocial variables [negative affect, internalization of a cultural (thin, muscular) ideal, low self-esteem, history of weight-related teasing, body dissatisfaction, and BMI] that are correlated with overconcern with body size and shape in women, as measured by the BSQ, will be correlated with overconcern with body size and shape in men, as measured by the MASS.

Pearson’s r was used to compute correlation coefficients between BSQ scores for women and each of the independent measures of (negative affect, internalization of cultural ideals, self-

esteem, history of weight-related teasing, body dissatisfaction, and BMI). For women, BSQ scores were significantly correlated ($p < .01$) with all of the predicted variables, with the exception of weight-related teasing and BMI. The correlations for the BSQ and each of the predictor variables for women are illustrated in Table 6.

Table 6: Correlations for the BSQ & the MASS and each of the Predictor Variables by Sex

Psychosocial Measures	BSQ		MASS	
	Men (N=80)	Women (N=124)	Men (N=80)	Women (N=124)
BIA-O (CBS-IBS)	.406	.500	-.221 ^b	.085 ^b
Body Mass Index	.339	.204	-.119	.073
NA scale of the PANAS	.228 ^a	.520^a	.221	.452
CES-D	.250	.363	.162	.272
Rosenberg Self-Esteem Scale	-.134 ^a	-.418^a	-.058	-.301
Body Shame subscale of the OBCS	-.372^a	-.724^a	-.544^b	-.928^b
POTS-R-WT	.516^a	.165 ^a	.145	.153

Note. Boldface indicates the correlation was significant at $p < .01$. Correlations in a row sharing superscripts are significantly different. BSQ = Body Shape Questionnaire; MASS = Muscle Appearance Satisfaction Scale; BIA-O (CBS-IBS) = Discrepancy score between current body size and ideal body size of the Body Image Assessment –Obesity; NA scale of PANAS = Negative Affect scale of the PANAS; CES-D = Center for Epidemiological Studies’ of Depression Scale; OBCS = Objectified Body Consciousness Scale; POTS-R-WT = Perception of Teasing Scale Revised-Weight Related Teasing Factor.

Fisher r-to-Z transformations were computed to compare the magnitude of the correlations between men and women. The magnitude of the correlations between the BSQ scores and the NA scale of the PANAS were significantly different for men and women, (the absolute value of Fisher $Z = -2.36 > 1.96$, $p < .05$). The magnitude of the correlations between the BSQ scores and the Rosenberg Self-Esteem Scale were significantly different for

men and women, (the absolute value of Fisher $Z = -2.13 > 1.96$, $p < .05$). The magnitude of the correlations between the BSQ scores and the body shame scale of the OBCS were significantly different for men and women, (the absolute value of Fisher $Z = 3.60 > 1.96$, $p < .05$). The magnitude of the correlations between the BSQ scores and the POTS-R-WT were also significantly different for men and women, (the absolute value of Fisher $Z = -2.36 > 1.96$, $p < .05$). The correlations between the BSQ scores and the other psychosocial measures were not significantly different for men and women.

Pearson's r was then used to compute correlation coefficients between MASS scores for men and each of the independent measures of (negative affect, internalization of cultural ideals, self-esteem, history of weight-related teasing, body dissatisfaction, and BMI). For men, MASS scores were significantly correlated ($p < .01$) with scores on the body shame scale of the OBCS ($r = -0.55$). It should be noted that the negative correlation between the OBCS and both the BSQ and the MASS demonstrates a positive relationship, since a lower score on the OBCS represents a higher level of internalization. All of the other predictor variables were not significantly correlated with scores on the MASS for men. The correlations for the MASS and each of the predictor variables for men are illustrated in Table 6.

Fisher r -to- Z transformations were conducted to compare the magnitude of the correlations between men and women. The magnitude of the correlations between MASS scores and the BIA-O discrepancy score were significantly different for men and women, since the absolute value of Fisher $Z = -2.12 > 1.96$, $p < .05$. The magnitude of the correlations between MASS scores and the body shame scale of the OBCS were significantly different for men and women, since the absolute value of Fisher $Z = 7.09 > 1.96$, $p < .05$. The correlations between

MASS scores and the other psychosocial measures were not significantly different for men and women.

Secondary Hypothesis 1 Body dissatisfaction, BMI, negative affect, internalization of the cultural (thin, muscular) ideal, low self-esteem, and history of weight-related teasing, will each significantly contribute to the total variance in BSQ scores for women, and significantly contribute to the total variance in total MASS scores for men.

Pearson's r was used to evaluate the inter-relationships between each of the independent variables (body dissatisfaction, BMI, negative affect, internalization of the cultural ideal, low self-esteem, and history of weight-related teasing). For women, the discrepancy score on the BIA-O was significantly correlated with BMI ($r = .52, p < .01$), with scores on the RSES ($r = -.237, p < .01$), and with scores on the body shame subscale of the OBCS ($r = -.36, p < .01$). Scores on the body shame subscale of the OBCS was also significantly correlated with scores on the RSES ($r = .35, p < .01$), with scores on the NA scale of the PANAS ($r = -.44, p < .01$), and with scores on the CES-D ($r = -.33, p < .01$). Scores on the CES-D were also significantly correlated with scores on the NA scale of the PANAS ($r = .65, p < .01$) and with scores on the RSES ($r = -.33, p < .01$). BMI for women was also significantly correlated with scores on the POTS-R-WT ($r = .47, p < .01$).

For men, the discrepancy score on the BIA-O was significantly correlated with BMI ($r = .66, p < .01$), and with scores on the POTS-R-WT ($r = .37, p < .01$), and BMI was significantly correlated with scores on the POTS-R-WT ($r = .33, p < .01$). Men's scores on the CES-D were also significantly correlated with their scores on the NA scale of the PANAS ($r = .66, p < .01$), and with their scores on the body shame subscale of the OBCS ($r = -.32, p < .01$), and the NA

scale scores of the PANAS were also significantly correlated with scores on the body shame subscale of the OBCS ($r = -.39, p < .01$). The intercorrelations between the independent variables for both men and women are illustrated in Table 7.

Table 7: Intercorrelations between Independent Variables for Men and Women

	BIA-O (CBS-IBS)	Body Mass Index	NA Scale of PANAS	CES-D	RSES	BSH Scale OBCS	POTS-R- WT
BIA-O (CBS-IBS)	--	.520*	.132	.138	-.237*	-.360*	.106
Body Mass Index	.655*	--	-.025	.018	-.153	-.129	.468*
NA Scale of PANAS	.016	-.139	--	.647*	-.207	-.438*	.100
CES-D	-.088	-.239	.662*	--	-.331*	-.327*	.089
RSES	.041	.023	-.142	-.022	--	.346*	-.223
BSH Scale OBCS	.183	.246	-.391*	-.318*	.272	--	-.068
POTS-R- WT	.369*	.328*	.182	.183	.054	-.231	--

Note: Intercorrelations for men are in boldface below the diagonal, and intercorrelations for women are presented above the diagonal. * $p < .01$. BIA-O (CBS-IBS) = Discrepancy score between current body size and ideal body size of the Body Image Assessment - Obesity; NA Scale of PANAS = Negative Affect scale of the Positive and Negative Affect Schedule; CES-D = Center for Epidemiological Studies' of Depression Scale; RSES = Rosenberg Self-Esteem Scale; BSH Scale OBCS = Body Shame Scale of the Objectified Body Consciousness Scale; POTS-R-WT = Perception of Teasing Scale Revised-Weight Related Teasing Factor.

In order to test the magnitude of influence that each of the predictor variables had on the outcome variables (BSQ for women & MASS for men), two sequential (hierarchical) multiple regressions were run using SPSS. For women, BSQ was entered as the dependent variable, body dissatisfaction (the discrepancy score on the BIA-O) was entered into the first step, BMI in the

second step, both negative affect scores (NA score of the PANAS & CES-D) and self-esteem (RSES) were entered into the third step, internalization of the cultural ideal (body shame score of the OBCS) was entered into the fourth step, and history of weight-related teasing (POTS-R-WT) was entered into the final step of the model.

In the first step, body dissatisfaction accounted for 25% of the total variance in BSQ scores for women, adjusted R squared = .244, $F(1, 122) = 40.592$, $p < .001$. Adding BMI in the second step did not significantly contribute to the model, adjusted R squared = .242, $F(1, 121) = .698$, $p = .405$. Adding negative affect and self-esteem scores in the third step (NA score on the PANAS, CES-D, & RSES) accounted for an additional 26.2% of the total variance, adjusted R squared = .495, $F(3, 118) = 21.28$, $p < .001$. The internalization of cultural ideals (body shame score of the OBCS) in the fourth step contributed an additional 14.8% of the total variance, adjusted R squared = .647, $F(1, 117) = 51.56$, $p < .001$. Adding history of weight-related teasing (POT-R-WT) in the fifth and final step did not significantly contribute to the model, adjusted R squared = .648, $F(1, 116) = 1.40$, $p = .240$. The final model accounted for 66.8% of the total variance in BSQ scores for women. The results of this multiple regression analysis are summarized in Table 8.

For men, the MASS was entered as the dependent variable, body dissatisfaction (the discrepancy score on the BIA-O) was entered into the first step, BMI in the second step, both negative affect scores (NA score of the PANAS & CES-D) and self-esteem (RSES) were entered into the third step, internalization of the cultural ideal (body shame score of the OBCS) was entered into the fourth step, and history of weight-related teasing (POTS-R-WT) was entered into the final step of the model.

Table 8: Hierarchical Regression Analysis for BSQ Scores with Women (N=124)

Variable	R ²	R ² Change	<i>B</i>
Step 1	.250	.250	
Body Dissatisfaction			.500
Step 2	.254	.004	
Body Mass Index			-.077
Step 3	.516	.262	
NA of the PANAS			.461
CES-D			-.076
RSES			-.257
Step 4	.664	.148	
Body Shame subscale of the OBCS			-.469
Step 5	.668	.004	
POTS-R-WT			.075

Note. Boldface indicates significance at $p < .01$. BSQ = Body Shape Questionnaire; NA of the PANAS = Negative Affect scale of the PANAS; CES-D = Center for Epidemiological Studies' of Depression Scale; RSES = Rosenberg Self-Esteem Scale; OBCS = Objectified Body Consciousness Scale; POTS-R-WT = Perception of Teasing Scale Revised-Weight Related Teasing Factor. It should be noted that running the multiple regression analysis by collapsing steps 3, 4, and 5 into one final step, did not alter the results or interpretations of the results.

In the first step, body dissatisfaction accounted for 4.9% of the total variance in MASS scores for men, adjusted R squared = .036, $F(1, 78) = 3.989$, $p < .05$. Adding BMI in the second step did not significantly contribute to the model, adjusted R squared = .025, $F(1, 77) = .090$, $p = .765$. The addition of the negative affect and self-esteem scores in the third step did not significantly contribute to the model either, adjusted R squared = .045, $F(3, 74) = 1.54$, $p = .211$. Adding the internalization of cultural ideals (body shame score of the OBCS) in the fourth step accounted for 23.3% of the total variance, adjusted R squared = .284, $F(1, 73) = 25.70$, $p < .001$. The final step (history of weight-related teasing, POTS-R-WT) did not significantly contribute to

the model, adjusted R squared = .276, $F(1, 72) = .21$, $p = .649$. The results of the multiple regression analysis are summarized in Table 9.

Table 9: Hierarchical Regression Analysis for MASS Scores with Men (N=80)

Variable	R ²	R ² Change	B
Step 1	.049	.049	
Body Dissatisfaction			-.221
Step 2	.050	.001	
Body Mass Index			.044
Step 3	.106	.056	
NA of the PANAS			.234
CES-D			.007
RSES			-.015
Step 4	.339	.233	
Body Shame subscale of the OBCS			-.556
Step 5	.340	.002	
POTS-R-WT			.052

Note. Boldface indicates significance at $p < .05$. MASS = Muscle Appearance Satisfaction Scale; NA of the PANAS = Negative Affect scale of the PANAS; CES-D = Center for Epidemiological Studies' of Depression Scale; RSES = Rosenberg Self-Esteem Scale; OBCS = Objectified Body Consciousness Scale; POTS-R-WT = Perception of Teasing Scale Revised-Weight Related Teasing Factor. It should be noted that running the multiple regression analysis by collapsing steps 3, 4, and 5 into one final step, did not alter the results or interpretations of the results.

Secondary Hypothesis 2 Women will score higher on the BSQ than men, and conversely men will score higher on the MASS than women.

A one-way ANOVA was used to compare the mean scores on the BSQ for men and women. As predicted, women ($M= 93.69$; $SD=31.701$) scored significantly higher on the BSQ than men ($M=58.74$; $SD=20.783$), $F(1) = 76.051$, $p < .001$. Another one-way ANOVA was then

used to compare mean scores on the MASS for men and women. Also as predicted, men ($M=43.95$; $SD=13.513$) scored significantly higher on the MASS than women ($M=35.69$; $SD=8.887$), $F(1) = 27.703$, $p < .001$.

Secondary Hypothesis 3 Scores on the BSQ and scores on the MASS will not be significantly correlated for men or women.

In order to determine if men's scores on the MASS and BSQ were related, Pearson's r was used. The Pearson's r correlation between men's scores on the MASS and men's scores on the BSQ was not significant, $r(78) = .21$, $p = .060$. For women, the Pearson's r correlation between their respective MASS and BSQ scores were significantly correlated, $r(122) = .52$, $p < .001$.

A Fisher r -to- Z transformation was computed to compare the magnitude of the correlations between men and women. The magnitude of correlations between BSQ scores and MASS scores were significantly different for men and women, (the absolute value of Fisher $Z = -2.41 > 1.96$, $p < .05$).

Secondary Hypothesis 4 For men, the muscle satisfaction subscale scores will be the most highly correlated of the five subscales of the MASS with scores on measures of negative affect, internalization of cultural (both a thin and muscular) ideal, low self-esteem, history of weight-related teasing, and BMI.

Pearson's correlations were then used to assess whether men's scores on the muscle satisfaction scale of the MASS were more highly correlated to each of the independent measures (negative affect, internalization of the cultural ideal, self-esteem, history of weight-related teasing, body dissatisfaction, and BMI) than any of the other four scales of the MASS. Pearson's r correlations for men between the muscle satisfaction scale of the MASS and the CES-D was

significant, $r(78) = .29, p < .01$, whereas none of the other four MASS scales were significantly correlated with CES-D scores. Pearson's r correlation between men's scores on the muscle satisfaction scale of the MASS and the body shame score of the OBCS were also significantly correlated, $r(78) = .29, p < .01$, however each of the other four MASS scales were more highly correlated. None of the other measures of predictor variables were significantly correlated with the muscle satisfaction scale of the MASS. No scales of the MASS were significantly correlated with BMI or the Rosenberg Self-Esteem Scale. However, the NA-scale of the PANAS, POTS-R-WT score, and the body dissatisfaction score BIA-O were significantly correlated with one or more of the other four MASS scales.

Secondary Hypothesis 5 For women, scores on the BSQ will be positively correlated with the total MAEDS score. Conversely, men's scores on the MASS will be positively correlated with the total score of the MAEDS.

Pearson's r correlations were run for women between their BSQ scores and their T-scores on each of the six scales of the MAEDS. All six scales were significantly correlated with BSQ scores for women at the .01 level. For men, Pearson's r correlations were computed between their MASS scores and their T-scores for each of the six scales of the MAEDS. Two of the six scales of the MAEDS were significantly correlated with men's scores on the MASS at the .01 level. The depression, binge eating, purgative behavior, and restrictive eating scales did not correlate significantly with men's scores on the MASS. The correlations are summarized in Table 10.

Table 10: Pearson's r Correlations with T-Scores for the 6 MAEDS Subscales

MAEDS Subscale	BSQ (women)	MASS (men)
Depression	.477	.153
Binge Eating	.672	.168
Purgative Behavior	.504	.246
Fear of Fatness	.740	.351
Restrictive Eating	.612	.081
Avoidance of Forbidden Foods	.436	.410

Note. Boldface indicates that the correlation was significant at $p < .01$. MAEDS = Multifactorial Assessment of Eating Disorders Symptoms; BSQ = Body Shape Questionnaire; MASS = Muscle Appearance Satisfaction Scale.

Discussion

The purpose of the present study was 1) to test if the MASS measures a parallel phenomenon in men that the BSQ does in women, the BSQ is presumed to measure overconcern with body size and shape in women; 2) to test if the same psychosocial correlates for overconcern with body size and shape in women, as measured by the BSQ, are also correlated with MASS scores in men.

All of the predictor variables in this study significantly correlated with the BSQ for women, except for history of weight-related teasing, as measured by the POTS-R-WT. This finding provides support for the theoretical model based on research on women (Figure 1). Additionally, men's BSQ scores were significantly correlated with all of the predictor variables except low self-esteem, as measured by the Rosenberg Self-Esteem Scale. This finding is contrary to the conclusions of Pope, Phillips, and Olivardia (2000), who suggested that recent studies indicate low self-esteem to be more strongly connected to poor body image in men over women. On the other hand, men's MASS scores were only correlated with internalization of the cultural body ideal (muscular and lean, as measured by the body shame scale of the OBCS), body dissatisfaction (as measured by the BIA-O), and negative affect (measured by the NA scale of the PANAS, but not with the CES-D). These results could suggest that not all of the predicted factors that are related to overconcern in women are related to overconcern with body size and shape, as measured by the MASS. However, if the MASS does not measure overconcern with body size and shape in men as was predicted, another measure specific to overconcern with body size and shape in men may be needed in order to clearly answer this question. If this is true, then these results may only suggest that the above stated variables are not related specifically to muscle dysmorphia symptoms in men.

For women, the predicted multiple regression model with BSQ scores for women was consistent with prior research (e.g., Womble et al., 1998). The model of psychosocial correlates of the BSQ accounted for 66.8% of the total variance in BSQ scores for women. As predicted, body dissatisfaction accounted for a large amount of variance (25%) in BSQ scores for women. However, BMI did not contribute to the total variance. One possible explanation of this finding is that BMI was accounted for in the body dissatisfaction measure. Past research has indicated that BMI may also be a risk factor for body dissatisfaction (Stice, 2002a; Stice & Whitenton, 2002).

Negative affect and self-esteem also contributed significantly (an additional 26.2%) to the proposed model for women. The internalization of the cultural (thin) ideal contributed an additional 14.8% of variance in BSQ scores for women. However, weight-related teasing, as measured by the POTS-R-WT did not significantly contribute to the total variance. Since there were word changes made to the items of the POTS-R-WT to reflect weight-related teasing at either end of the weight continuum, these changes may have altered the validity of this measure. It would be useful to re-evaluate the validity of this measure with the word changes that were made. The results suggest that teasing may only contribute a small amount of variance after the other predictor variables are controlled. After all of the above variables were statistically controlled, self-esteem accounted for an additional 1.6% of total variance.

The results of this study support previous research that showed that women score higher on the BSQ than men (Strong et al., 2000), and that men score higher on the MASS than women (Mayville et al, 2002). These results also suggest that the both of these measures may be gender specific in terms of their validity. The concerns with body size and shape addressed on the BSQ might be specific to women, but not to the concerns with body size and shape common in men.

The predicted model for MASS scores in men was not supported by the results of this study. Only two factors significantly contributed to the predicted regression model for MASS scores for men, [internalization of the cultural (muscular and lean) ideal, and body dissatisfaction]. Only 34% of the total variance in MASS scores for men, was accounted for by the proposed model. In addition, the men's BSQ scores were significantly correlated with all of the predictor variables except self-esteem, and the men's MASS scores were not. This finding suggests that the BSQ and the MASS are not measuring the same construct for men. Therefore, the results do not support the hypothesis that the MASS measures a parallel phenomenon in men as the BSQ does for women. The MASS may be specific to muscle dysmorphia symptoms only, and not the general construct of overconcern with body size and shape in men. It is also possible that the MASS does measure overconcern with body size and shape in men, but the same correlates that hold true for women are not related to overconcern in men. Additional research in this area will be necessary to clarify this question.

Scores on the BSQ and the MASS were highly correlated for women, but not for men in this study. These results may indicate that women who are highly concerned about their body size and shape are also concerned about their muscle satisfaction and other muscle dysmorphia symptoms measured by the MASS. Whereas, men's body image concerns may have little to do with the body size and shape concerns that are reflected in the BSQ, and more to do with the lean and muscular body ideals for men (Pope, Gruber, et al., 2000). The MASS may better reflect the concerns men have with their body size and shape, specifically in reference to perceived muscularity. No one subscale of the MASS was more highly correlated with all of the predictor variables than the other subscales. This indicates that the total MASS score may provide a more accurate assessment of muscle dysmorphia symptoms, rather than any one subscale alone.

As was predicted, all of the MAEDS subscales were highly correlated with BSQ scores for women. This finding is consistent with prior research that has found overconcern with body size and shape to be one of the most strongly supported risk factors for eating disorders (Cooley & Toray, 2001; Kaye et al., 2002; Cooper, Taylor, Cooper, & Fairburn, 1987; Strong et al., 2000; Williamson, 1996), since the MAEDS measures level of eating disorder symptoms. On the other hand, only half of the MAEDS subscales were significantly correlated with MASS scores for men. The fear of fatness, avoidance of fear foods, and purgative behavior subscales were significantly correlated. Since the cultural ideal for body size in men is currently lean and muscular (Leit et al., 2002; Leit et al., 2000; Olivardia, 2001; Pope, Gruber, et al., 2000; Pope, Phillips, et al., 2000; Pope et al., 1999), and since men who suffer from muscle dysmorphia are typically searching for this ideal, the correlation with men's MASS scores and fear of fatness seems logical. The correlation of the MASS with the avoidance of fear foods and purgative behaviors subscales may suggest that men who endorse muscle dysmorphia symptoms are also willing to use such drastic means to accomplish their desired body size and shape, which is consistent with the rigid dieting and other extreme behaviors seen in individuals with muscle dysmorphia (Olivardia, 2001). The depression subscale of the MAEDS was not significantly correlated with MASS scores for men. This finding is consistent with another finding from this study that depression, as was measured by the CES-D, was also not correlated with MASS scores for men, and therefore depressive symptoms do not appear to be highly related to muscle dysmorphia symptoms.

There were several limitations of the present study. First, the findings were all based on correlations, and therefore causation cannot be inferred. However, based on the results of this study, further research looking at the nature and direction of the relationship between muscle

dysmorphia symptoms and the internalization of the muscular and lean body size for men, body dissatisfaction, and negative affect may be warranted. Second, with the exception of the BMI, all constructs were measured by self-report. Clinical interviews might also be useful for future research. Third, this study was cross-sectional by design, and longitudinal studies would be necessary to clarify the direction of correlations among the variables. Fourth, the results of this study are based on a college sample, and caution should be taken when generalizing these results to different populations.

Finally, considering the small amount of total variance of MASS scores accounted for by the proposed model, it is possible that the measures used in this study were not relevant to body concerns in men. For example, the BIA-O, while validated for use with both men and women (Williamson, Womble, et al., 2000), may not be the best measure of body dissatisfaction for males. Since the silhouettes of the BIA-O go from very thin to obese without any attention to muscularity, these silhouettes might not adequately measure body dissatisfaction in males. Many of the male participants provided feedback to the author, suggesting that these silhouettes were not representative of their “ideal” or “current” body size. Examples of statements made by male participants about the BIA-O include: “There are only thin or fat options, and both could be seen as negative. None of the images are ideal to me.” Another male participant stated that “none of the silhouettes are ideal, they are all either skinny or fat, none are muscular.” In future research, an alternative measure of body dissatisfaction should be used for male participants. There is currently a computerized body morphing assessment measure that is based on the BIA-O, that is in the process of being validated, and this measure might be better suited in future studies comparing men and women in the area of body dissatisfaction and other body image concerns.

In conclusion, the results of this study indicate that the BSQ and the MASS do not measure the same construct, overconcern with body size and shape. However, both measures may be gender specific. The concerns that men have about their body size and shape appear to differ from those of women (Hill et al., 1994), just as their body size and shape ideals differ (e.g., an extremely thin body ideal for women, and a lean and muscular body ideal for men; Choi, Pope, Olivardia, 2002). Current research suggests that men are becoming more concerned with the size and shape of their bodies (Cash 1997; Mayville, Williamson, White, Netemeyer, & Drab, 2002; Edwards & Laudner, 2000), at the same time the male ideal body size is becoming increasingly lean and muscular (Pope, Gruber, et al., 2000). However research in the area of body image concerns for men remains limited at this time. Further, muscle dysmorphia, a psychiatric disorder characterized by a pathological preoccupation with the perception that one's body is not sufficiently muscular, is seen predominately in men (Pope et al., 1997; Pope et al., 1999; Olivardia, 2001). Since there is evidence that the body image concerns and associated distress seen in individuals with muscle dysmorphia resembles those seen in individuals with eating disorders (Pope et al., 1997; Pope, Phillips et al., 2000), increased research efforts in this area are warranted. In addition, alternative measures may need to be identified or developed, in order to more accurately compare concerns with body size and shape between men and women in future research.

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Appendix A

Positive and Negative Affect Schedule

PANAS

This scale consists of a number of words that describe different feelings and emotions. Read each word and then mark the appropriate answer (FILL IN THE CIRCLE) in the space next to that word. Indicate the extent you feel this way in general, that is, on the average. Use the following scale to record your answers (number) in the space provided next to each word.

	very slightly or not at all	a little	moderately	quite a bit	extremely
Interested	1	2	3	4	5
Distressed	1	2	3	4	5
Excited	1	2	3	4	5
Upset	1	2	3	4	5
Strong	1	2	3	4	5
Guilty	1	2	3	4	5
Scared	1	2	3	4	5
Hostile	1	2	3	4	5
Enthusiastic	1	2	3	4	5
Proud	1	2	3	4	5
Irritable	1	2	3	4	5
Alert	1	2	3	4	5
Ashamed	1	2	3	4	5
Inspired	1	2	3	4	5
Nervous	1	2	3	4	5
Determined	1	2	3	4	5
Attentive	1	2	3	4	5
Jittery	1	2	3	4	5
Active	1	2	3	4	5
Afraid	1	2	3	4	5

Appendix B

Center for Epidemiological Studies' Depression Scale

CES-D

Please FILL IN THE CIRCLE that corresponds with how often you have felt this way DURING THE PAST WEEK.

	Rarely or none of the time (less than 1 day)	Some or little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-days)
1. I was bothered by things that usually don't bother me.	1	2	3	4
2. I did not feel like eating; my appetite was poor.	1	2	3	4
3. I felt that I could not shake off the blues even with help from my family or friends.	1	2	3	4
4. I felt I was just as good as other people.	1	2	3	4
5. I had trouble keeping my mind on what I was doing.	1	2	3	4
6. I felt depressed.	1	2	3	4
7. I felt that everything I did was an effort.	1	2	3	4
8. I felt hopeful about the future.	1	2	3	4
9. I thought my life had been a failure.	1	2	3	4
10. I felt fearful.	1	2	3	4

	Rarely or none of the time (less than 1 day)	Some or little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-days)
11. My sleep was restless.	1	2	3	4
12. I was happy.	1	2	3	4
13. I talked less than usual.	1	2	3	4
14. I felt lonely.	1	2	3	4
15. People were unfriendly.	1	2	3	4
16. I enjoyed life.	1	2	3	4
17. I had crying spells.	1	2	3	4
18. I felt sad.	1	2	3	4
19. I felt that people disliked me.	1	2	3	4
20. I could not get “going”.	1	2	3	4

Appendix C

Objectified Body Consciousness Scale

OBCS

Please indicate the degree to which you agree or disagree with each of the statements below, or indicate if the statement does not apply to you by filling in the NA circle. Please respond to all of the statements. (FILL IN THE CIRCLE)

	definitely	strongly agree	agree	neutral	disagree	strongly disagree	definitely not
1. I rarely think about how I look.	1	2	3	4	5	6	7
2. When I can't control my weight, I feel like something must be wrong with me.	1	2	3	4	5	6	7
3. I think a person is pretty much stuck with the looks they are born with.	1	2	3	4	5	6	7
4. I think it is more important that my clothes are comfortable than whether they look good on me.	1	2	3	4	5	6	7
5. I feel shamed of myself when I haven't made the effort to look my best.	1	2	3	4	5	6	7
6. A large part of being in shape is having that kind of body in the first place.	1	2	3	4	5	6	7
7. I think more about how my body feels than how my body looks.	1	2	3	4	5	6	7
8. I feel like I must be a bad person when I don't look as good as I could.	1	2	3	4	5	6	7
9. I think a person can look pretty much how they want to if they are willing to work at it.	1	2	3	4	5	6	7
10. I rarely compare how I look with how other people look.	1	2	3	4	5	6	7
11. I would be ashamed for people to know what I really weigh.	1	2	3	4	5	6	7
12. I really don't think I have much control over how my body looks.	1	2	3	4	5	6	7
13. During the day, I think about how I look many times.	1	2	3	4	5	6	7
14. I never worry that something is wrong with me when I am not exercising as much as I should.	1	2	3	4	5	6	7
15. I think a person's weight is mostly determined by the genes they are born with.	1	2	3	4	5	6	7
16. I often worry about whether the clothes I am wearing make me look good.	1	2	3	4	5	6	7
17. When I'm not exercising enough, I question whether I am a good enough person.	1	2	3	4	5	6	7
18. It doesn't matter how hard I try to change my weight, it's probably always going to be about the same.	1	2	3	4	5	6	7

	definitely	strongly agree	agree	neutral	disagree	strongly disagree	definitely not
19. I rarely worry about how I look to other people.	1	2	3	4	5	6	7
20. Even when I can't control my weight, I think I am an okay person.	1	2	3	4	5	6	7
21. I can weigh what I'm supposed to when I try hard enough.	1	2	3	4	5	6	7
21. I am more concerned with what my body can do than how it looks.	1	2	3	4	5	6	7
23. When I'm not the size I think I should be, I feel ashamed.	1	2	3	4	5	6	7
24. The shape you are in depends mostly on your genes.	1	2	3	4	5	6	7

Appendix D

The Rosenberg Self-Esteem Scale

RSES

Please record the appropriate answer per item, depending on whether you strongly agree, agree, disagree, or strongly disagree with it. (FILL IN THE CIRCLE)

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. On the whole, I am satisfied with myself.	1	2	3	4
2. At times I think I am no good at all.	1	2	3	4
3. I feel that I have a number of good qualities.	1	2	3	4
4. I am able to do things as well as most other people.	1	2	3	4
5. I feel I do not have much to be proud of.	1	2	3	4
6. I certainly feel useless at times.	1	2	3	4
7. I feel that I'm a person of worth, at least on an equal plane with others.	1	2	3	4
8. I wish I could have more respect for myself.	1	2	3	4
9. All in all, I am inclined to feel that I am a failure.	1	2	3	4
10. I take a positive attitude toward myself.	1	2	3	4

Appendix E

Perception of Teasing Scale Revised – Weight Related Teasing Factor (with word changes)

POTS-R-WT (with word changes)

The following questions should be answered with respect to the period of time when you were growing up (ages 5-16). Rate how often you think you have been the object of such behavior (using the scale provided, FILL IN THE CIRCLE).

	never		sometimes		very often
1. People made fun of you because of your size and/or shape.	1	2	3	4	5
2. People made jokes about your size and/or shape.	1	2	3	4	5
3. People laughed at you for trying out for sports because of your size and/or shape.	1	2	3	4	5
4. People called you names like “fatso”.	1	2	3	4	5
5. People pointed at you because of your size and/or shape.	1	2	3	4	5
6. People snickered about your size and/or shape when you walked into a room alone.	1	2	3	4	5

Appendix F

Body Image Assessment - Obesity

BIA-O (raw scores)

Figure that represents “current body size” _____

Figure that represents “ideal body size” _____

Figure that represents “realistic body size” _____
(able to maintain over a long period of time)

Appendix G

Body Shape Questionnaire (Original)

BSQ (original)

*We would like to know how you have been feeling about your appearance over the PAST FOUR WEEKS. Please read each question and FILL IN the appropriate number choice. Please answer all the questions.

	never	rarely	sometimes	often	very often	always
1. Has feeling bored made you brood about your shape?	1	2	3	4	5	6
2. Have you been so worried about your shape that you	1	2	3	4	5	6
3. Have you thought that your thighs, hips, or bottom are too large for the rest of you?	1	2	3	4	5	6
4. Have you been afraid that you might become fat?	1	2	3	4	5	6
5. Have you worried about your flesh not being firm enough?	1	2	3	4	5	6
6. Has feeling full (e.g., after eating a large meal) made you feel fat?	1	2	3	4	5	6
7. Have you felt so bad about your shape that you have cried?	1	2	3	4	5	6
8. Have you avoided running because your flesh might wobble?	1	2	3	4	5	6
9. Has being with thin women made you feel self-conscious about your shape?	1	2	3	4	5	6
10. Have you worried about your thighs spreading out when sitting down?	1	2	3	4	5	6

	never	rarely	sometimes	often	very often	always
11. Has eating even small amounts of food made you feel fat?	1	2	3	4	5	6
12. Have you noticed the shape of other women and felt that your own shape compared unfavorably?	1	2	3	4	5	6
13. Has thinking about your shape interfered with your ability to concentrate (e.g., while watching TV, reading, listening to conversations)?	1	2	3	4	5	6
14. Has being naked, such as when taking a bath made you feel fat?	1	2	3	4	5	6
15. Have you avoided wearing clothes which make you particularly aware of the shape of your body?	1	2	3	4	5	6
16. Have you imagined cutting off fleshy areas of your body?	1	2	3	4	5	6
17. Has eating sweets, cakes, or other high calorie food made you feel fat?	1	2	3	4	5	6
18. Have you not gone out to social occasions (e.g., parties) because you have felt bad about your shape?	1	2	3	4	5	6
19. Have you felt excessively large and rounded?	1	2	3	4	5	6
20. Have you felt ashamed of your body?	1	2	3	4	5	6
21. Has worry about your shape made you diet?	1	2	3	4	5	6

	never	rarely	sometimes	often	very often	always
22. Have you felt happiest about your shape when your stomach has been empty?	1	2	3	4	5	6
23. Have you thought that you are the shape you are because you lack self-control?	1	2	3	4	5	6
24. Have you worried about other people seeing rolls of flesh around your waist or stomach?	1	2	3	4	5	6
25. Have you felt that it is not fair that other women are thinner than you?	1	2	3	4	5	6
26. Have you vomited in order to feel thinner?	1	2	3	4	5	6
27. When in company have you worries about taking up too much room (e.g., sitting on a sofa or bus seat)?	1	2	3	4	5	6
28. Have you worried about your flesh being dimply?	1	2	3	4	5	6
29. Has seeing your reflection (e.g., in a mirror or shop window) made you feel bad about your shape?	1	2	3	4	5	6
30. Have you pinched areas of your body to see how much fat is there?	1	2	3	4	5	6
31. Have you avoided situations where people could see your body (e.g., communal changing rooms or swimming pools)?	1	2	3	4	5	6

	never	rarely	sometimes	often	very often	always
32. Have you taken laxatives in order to feel thinner?	1	2	3	4	5	6
33. Have you been particularly self-conscious about your shape when in the company of other people?	1	2	3	4	5	6
34. Has worry about your shape made you feel you ought to exercise?	1	2	3	4	5	6

Appendix H

Body Shape Questionnaire (with word changes)

BSQ (with word changes)

*We would like to know how you have been feeling about your appearance over the PAST FOUR WEEKS. Please read each question and FILL IN the appropriate number choice. Please answer all the questions.

	never	rarely	sometimes	often	very often	always
1. Has feeling bored made you brood about your shape?	1	2	3	4	5	6
2. Have you been so worried about your shape that you	1	2	3	4	5	6
3. Have you thought that your thighs, hips, or bottom are too large for the rest of you?	1	2	3	4	5	6
4. Have you been afraid that you might become fat?	1	2	3	4	5	6
5. Have you worried about your flesh not being firm enough?	1	2	3	4	5	6
6. Has feeling full (e.g., after eating a large meal) made you feel fat?	1	2	3	4	5	6
7. Have you felt so bad about your shape that you have cried?	1	2	3	4	5	6
8. Have you avoided running because your flesh might wobble?	1	2	3	4	5	6
9. Has being with thin men made you feel self-conscious about your shape?	1	2	3	4	5	6
10. Have you worried about your thighs spreading out when sitting down?	1	2	3	4	5	6

	never	rarely	sometimes	often	very often	always
11. Has eating even small amounts of food made you feel fat?	1	2	3	4	5	6
12. Have you noticed the shape of other men and felt that your own shape compared unfavorably?	1	2	3	4	5	6
13. Has thinking about your shape interfered with your ability to concentrate (e.g., while watching TV, reading, listening to conversations)?	1	2	3	4	5	6
14. Has being naked, such as when taking a bath made you feel fat?	1	2	3	4	5	6
15. Have you avoided wearing clothes which make you particularly aware of the shape of your body?	1	2	3	4	5	6
16. Have you imagined cutting off fleshy areas of your body?	1	2	3	4	5	6
17. Has eating sweets, cakes, or other high calorie food made you feel fat?	1	2	3	4	5	6
18. Have you not gone out to social occasions (e.g., parties) because you have felt bad about your shape?	1	2	3	4	5	6
19. Have you felt excessively large and rounded?	1	2	3	4	5	6
20. Have you felt ashamed of your body?	1	2	3	4	5	6
21. Has worry about your shape made you diet?	1	2	3	4	5	6

	never	rarely	sometimes	often	very often	always
22. Have you felt happiest about your shape when your stomach has been empty?	1	2	3	4	5	6
23. Have you thought that you are the shape you are because you lack self-control?	1	2	3	4	5	6
24. Have you worried about other people seeing rolls of flesh around your waist or stomach?	1	2	3	4	5	6
25. Have you felt that it is not fair that other men are thinner than you?	1	2	3	4	5	6
26. Have you vomited in order to feel thinner?	1	2	3	4	5	6
27. When in company have you worries about taking up too much room (e.g., sitting on a sofa or bus seat)?	1	2	3	4	5	6
28. Have you worried about your flesh being dimply?	1	2	3	4	5	6
29. Has seeing your reflection (e.g., in a mirror or shop window) made you feel bad about your shape?	1	2	3	4	5	6
30. Have you pinched areas of your body to see how much fat is there?	1	2	3	4	5	6
31. Have you avoided situations where people could see your body (e.g., communal changing rooms or swimming pools)?	1	2	3	4	5	6

	never	rarely	sometimes	often	very often	always
32. Have you taken laxatives in order to feel thinner?	1	2	3	4	5	6
33. Have you been particularly self-conscious about your shape when in the company of other people?	1	2	3	4	5	6
34. Has worry about your shape made you feel you ought to exercise?	1	2	3	4	5	6

Appendix I

Muscle Appearance Satisfaction Scale

MASS

Please answer the following questions as they relate to you over the past four weeks. There are not right or wrong answers. Please answer each question honestly. All information that you provide will remain confidential.

***Please fill in the circle that corresponds best with your answer.**

	definitely disagree	mostly disagree	neither agree nor disagree	mostly agree	definitely agree
1. When I look at my muscles in the mirror, I often feel satisfied with my current muscle size.	1	2	3	4	5
2. If my schedule forces me to miss a day of working out with weights, I feel very upset.	1	2	3	4	5
3. I often ask friends and/or relatives if I look big.	1	2	3	4	5
4. I am satisfied with the size of my muscles.	1	2	3	4	5
5. I often spend money on muscle building supplements.	1	2	3	4	5
6. It is OK to use steroids to add muscle mass.	1	2	3	4	5
7. I often feel like I am addicted to working out with weights.	1	2	3	4	5
8. If I have a bad workout, it is likely to have a negative effect on the rest of my day.	1	2	3	4	5
9. I would try anything to get my muscles to grow.	1	2	3	4	5
10. I often keep working out even when my muscles or joints are sore from previous workouts.	1	2	3	4	5
11. I often spend a lot of time looking at my muscles in the mirror.	1	2	3	4	5
12. I spend more time in the gym working out than most others who work out.	1	2	3	4	5

	definitely disagree	mostly disagree	neither agree nor disagree	mostly agree	definitely agree
13. In order to get big, one must be able to ignore a lot of pain.	1	2	3	4	5
14. I am satisfied with my muscle tone/definition.	1	2	3	4	5
15. My self-worth is very focused on how my muscles look.	1	2	3	4	5
16. I often ignore a lot of physical pain while I am lifting in order to get bigger.	1	2	3	4	5
17. I must get bigger muscles by any means necessary.	1	2	3	4	5
18. I often seek reassurance from others that my muscles are big enough.	1	2	3	4	5
19. I often find it difficult to resist checking the size of my muscles.	1	2	3	4	5

Appendix J

Multifactorial Assessment of Eating Disorders Symptoms

MAEDS

Please rate the following statements as truthfully as possible by filling in the box that most accurately describes how you feel.

	Never	Very Rarely	Rarely	Sometimes	Often	Very Often	Always
1. Fasting is a good way to lose weight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. My sleep isn't as good as it used to be.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I avoid eating for as long as I can.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Certain foods are "forbidden" for me to eat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I can't keep certain foods in my house because I will binge on them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I can easily make myself vomit.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I feel that being fat is terrible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I avoid greasy foods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. It's okay to binge and purge once in a while.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I don't eat certain foods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. I think I am a good person.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. My eating is normal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I can't seem to concentrate lately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I try to diet by fasting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. I vomit to control my weight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Lately nothing seems enjoyable anymore.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Laxatives help keep you slim.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I don't eat red meat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Never	Very Rarely	Rarely	Sometimes	Often	Very Often	Always
19. I eat so rapidly I can't even taste my food.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I do everything I can to avoid being overweight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. When I feel bloated, I must do something to rid myself of that feeling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. I overeat too frequently.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. It's okay to be overweight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. Recently I have felt that I am a worthless person.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. I would be very upset if I gained 2 pounds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. I crave sweets and carbohydrates.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. I lose control when I eat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Being fat would be terrible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. I have thought seriously about suicide lately.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. I don't have any energy anymore.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. I eat small portions to control my weight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. I eat 3 meals a day.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Lately I have been easily irritated.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Some foods should be totally avoided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. I use laxatives to control my weight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. I am terrified by the thought of being overweight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. Purging is a good way to lose weight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. I avoid fatty foods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Recently I have felt pretty blue.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Never	Very Rarely	Rarely	Often	Very Often	Always
40. I am obsessed with becoming overweight.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
41. I don't eat fried foods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42. I skip meals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43. Fat people are unhappy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44. People are too concerned with the way I eat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45. I feel good when I skip meals.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46. I avoid foods with sugar.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47. I hate it when I feel fat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48. I am too fat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49. I eat until I am completely stuffed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50. I hate to eat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51. I feel guilty about a lot of things these days.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
52. I'm careful of what I eat.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53. I can "hold off" and not eat even if I'm hungry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54. I eat even when I am not hungry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55. Fat people are disgusting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56. I wouldn't mind gaining a few pounds.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix K
Demographic Questionnaire

Subject Number _____ **Demographic Questionnaire**

***Please answer all of the following questions. All responses will remain anonymous.**

What is your age? _____ What is your sex? Male (1) Female (2)

What is your marital status? Single (= 1) Married (= 2) Divorced (= 3) Other (= 4)

What is your ethnicity? (please circle)

- A. African American (= 1)
- B. Asian (= 2)
- C. Caucasian (= 3)
- D. Hispanic (= 4)
- E. Other _____ (= 5)

What year of school are you presently enrolled in at LSU? (please circle)

- A. Freshman (= 1)
- B. Sophomore (= 2)
- C. Junior (= 3)
- D. Senior (= 4)
- E. Graduate Student (= 5)

What is your height? _____ What is your weight? _____

Do you belong to a gym? Yes (= 2) No (= 1)

Do you regularly exercise? Yes (= 2) No (= 1)

If you answered yes, how often do you exercise? (please circle)

- A. Once or twice a week
- B. Three to five times a week
- C. Nearly everyday of the week

Do you regularly lift weights? Yes (= 2) No (= 1)

If you answered yes, how often do you lift weights? (please circle)

- A. Once or twice a week
- B. Three to five times a week
- C. Nearly everyday of the week

Have you ever taken diet pills? Yes (= 2) No (= 1)

Have you ever used nutritional supplements to gain weight? Yes (= 2) No (= 1)

Have you ever suffered from an eating disorder? Yes (= 2) No (= 1)
If “Yes”, please indicate which one by circling the answer below.

- A. Anorexia Nervosa
- B. Bulimia Nervosa
- C. Eating Disorder – Not Otherwise Specified

Please CIRCLE the number below that best describes the sexual orientation you identify most with.

- 0. Exclusively heterosexual (= 1)
- 1. Predominately heterosexual, only incidentally homosexual (= 2)
- 2. Predominately heterosexual, but more than incidentally homosexual (= 3)
- 3. Equally heterosexual and homosexual (= 4)
- 4. Predominately homosexual, but more than incidentally heterosexual (= 5)
- 5. Predominately homosexual, but incidentally heterosexual (= 6)
- 6. Exclusively homosexual (= 7)

What do you consider as your gender and sexual orientation? (please circle)

- A. heterosexual male (= 1)
- B. heterosexual female (= 2)
- C. homosexual male (= 3)
- D. lesbian (= 4)
- E. other _____ (= 5)

Vita

Amy Rzeznikiewicz was born and raised in Brooklyn, Connecticut. She attended Colby College in Waterville, Maine, where she received her Bachelor of Arts degree in 1997. After completing her undergraduate degree, Amy worked for one and one half years as a Residential Case Manager for children with brain injuries at The May Center for Neurorehabilitation, located in Randolph, Massachusetts. Following her work at the May Center, she worked as a Residential Counselor for two and one half years at the Harvard Medical School affiliated Obsessive-Compulsive Disorder Institute at McLean Hospital, located in Belmont, Massachusetts. She is currently a doctoral student in the Department of Psychology at Louisiana State University, working with Dr. Donald Williamson, in the area of eating and weight-related disorders. Amy will earn her Master of Arts degree in clinical psychology in May of 2004.