THE RELATIONSHIP BETWEEN BODY IMAGE DISSATISFACTION AND PSYCHOLOGICAL HEALTH: AN EXPLORATION OF BODY IMAGE IN YOUNG ADULT MEN

DISSERTATION

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By

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ABSTRACT

This study examined the relationship between body dissatisfaction and psychological health. Several scholars have suggested that body image is an increasingly relevant issue for men. There is also increasing literature suggesting that factors such as muscularity, a central component of body image in men, may be related to psychological health. However, limitations in current measurement make it unclear how meaningful such findings are. Furthermore, few extant studies in the general body image literature have examined the role of positive psychological coping variables. Therefore, this study sought to examine the relationship between body dissatisfaction and psychological health. It was hypothesized that body dissatisfaction would be positively correlated with symptoms of psychological distress, and negatively correlated with indices of positive psychological adjustment. Furthermore, it was hypothesized that the indices of positive psychological adjustment (satisfaction with life, proactive coping, hardiness, and optimism) would moderate, or buffer, the relationship between body dissatisfaction and the indicators of psychological distress (depression, symptom reports, self esteem). It was also hypothesized that the Male Body Attitudes Scale, a new measure of body dissatisfaction in men, would demonstrate adequate reliability and validity.
In this study, 368 male participants recruited from an introductory psychology class took ten measures: the General Health Questionnaire-28, the Center for Epidemiological Studies-Depression Scale, the Rosenberg Self-Esteem scale, the Satisfaction with Life Scale, the Psychological Hardiness Scale, the Proactive Coping Scale, the Life Orientation Test-Revised, the Male Body Dissatisfaction Scale, the Drive for Muscularity Scale, and the Drive for Muscularity Attitudes Questionnaire. Participants also completed a demographics questionnaire that asked for information regarding race, age, sexual orientation, year in school, weight, height, and sports participation. Correlational analysis was used to examine the hypothesis regarding the relationship between body dissatisfaction and the psychological health indices, and hierarchical moderated regression analysis was used to examine the buffering hypothesis. Furthermore, MANOVA was used to assess the demographic variables, and ANOVA was utilized to test for order effects. Maximum likelihood analysis was utilized to impute missing data values before initiating these analyses.

The first main hypothesis of this study, that body image dissatisfaction would be positively related to indices of psychological distress, and negatively related to indicators of positive psychological adjustment, was supported. The second main hypothesis of this study, that the relationship between body image dissatisfaction and indices of psychological distress would be moderated by the indicators of positive psychological adjustment, was not supported overall. The reliability of the MBAS overall scale and its three subscales, as well as the convergent and concurrent validity of these scales, was supported. These results support the practical significance of body image for men.
I would like to thank my advisor, Dr. Don Dell, for his support in the development and writing of this dissertation. In the initial development of my dissertation, he provided me with alternative ideas, an objective viewpoint, and reminded me of the larger picture whenever I got mired in the details. I also appreciate the constructive feedback given throughout the various stages of writing this dissertation, and appreciate the patience you have shown in this process. My dissertation would be assuredly inferior without his assistance.

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CHAPTER 1

INTRODUCTION

For the past several decades research on body image has been a growing area. Historically, this research has focused on the female population (Green & Pritchard, 2003). An either implicit or explicit assumption that western, Caucasian, middle-upper class, white women are the predominant population for whom body image concerns are relevant seems to pervade such literature. As such, focus has not often been given towards the effects of culture, social status, sexual orientation, gender, and other dimensions of human differences on how body image concerns manifest. More recent literature has begun to consider these important variables and how they affect the nature of body image concerns (e.g. Shaw, Ramirez, Trost, Randall, & Stice, 2004; Yelland & Tiggemann, 2003). Among these new findings, it has been suggested that body image concerns are increasingly faced by men, in contrast to previous theoretical and empirical work that has suggested body image concerns predominantly affect only women (Brownell, 1991; Erickson, 1968; Fallon & Rozin, 1985; Lerner, Knapp, & Orlos, 1973; Pliner, Chaiken, & Flett 1990).

Furthermore, studies have shown definite differences between men and women in the nature of body dissatisfaction. In general, females in empirical studies have reported
almost without exception wanting to lose weight, while men have reported often, if not typically, desiring to gain weight (Betz, Mintz, & Speakmon, 1994; Cohene & Pope, 2001; Drewnoski, 1987; Mintz & Betz, 1986; Pope, Gruber, Mangweth, Bureau, deCol, Jouvent, & Hudson, 2000; Silberstein, Striegel-Moore, Timko, & Rodin 1988). Body change strategies also often differ between males and females, with men typically preferring exercise over diet and females diet over exercise (Huon, 1994; McCabe & Ricciardelli, 2001). Relatedly, one component of body image that seems particularly promising towards developing a better understanding of male body image and how it is distinct from female body image is muscularity. The common desire to gain weight in males is likely linked to a desire to have increased muscle mass (Edwards & Launder, 1999; Jacobi & Cash, 1994; McCreary & Sasse, 2000; Morrison, Morrison, & Hopkins, 2003; Pope et al., 2000; Tucker, 1982). While muscle development has been found to be an important issue for men, women in empirical studies typically report that muscularity is not a salient concern (Fisher, Dunn, & Thompson, 2002). Other studies have indicated that there are increasing socio-cultural messages related to muscularity (Labre, 2002; Leit, Gray, & Pope, 2002; Leit, Pope, & Gray, 2001; Mishkind, Rodin, Silberstein, & Striegel-Moore, 1986; Pope, Olivardia, Gruber, & Borowiecki, 1999), suggesting that body image concerns may be increasing for men.

Thus, these more recent studies not only suggest that body image can be important for men, but also that body image issues salient for men are qualitatively different from those faced by women. Despite these findings suggesting major differences in the nature of body image in men and women, comparatively little empirical research has focused on the unique factors important to understanding male body image. Nevertheless, the extant
research is sufficient to highlight ways in which the more traditional paradigms
developed from research on women used in conceptualizing body image, such as the
drive for thinness (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999), fail to
adequately explain the construct of body image in men. It is for such reasons that
constructs such as the drive for muscularity have been developed to address body image
coms for men (McCreary & Sasse, 2000).

Identifying muscularity as a potentially important variable in understanding male
body image has been a significant step in the literature, along with the development of
nascent theoretical models. Another critical step in the development of this area is to
establish psychometrically sound measures that assess body image issues relevant to men.
The body image literature is dominated by measures developed and normed on female
populations (Cohane & Pope, 2001). Such measures are thus tailored towards the
concerns of women, and reflect theoretical models of female body image. Alternatively,
there is a notable paucity of measures focusing on male body image. That is, few extant
measures are designed based on conceptual models of male body image, and few extant
measures have been derived empirically from the study of males. Without the recognition
of the qualitatively different nature of male body image concerns, past studies have often
used measures based on women, with no or minimal modifications for male subjects
(Cafri & Thompson, 2004). Thus, in such cases the data gathered on male subjects is
arguably at best of minimal relevance, and at worst invalid. Given the increasingly clear
recognition of male body image concerns, the development of measures relevant to men
is a critical next step in the development of this literature, one which current researchers
in the area are working towards accomplishing.
It is important not to overlook recent developments in the assessment of male body image. For example, several instruments focused on men have been developed in the past decade, such as the Swansea Muscularity Attitudes Questionnaire (Edwards & Launder, 1999) and the Drive for Muscularity Scale (McCreary & Sasse, 2000). Cafri and Thompson (2004) provide a helpful summary of the current methodology in this area. They highlight three important criteria for measures in this area: evaluating a muscular appearance; items indirectly related to body appearance, such as regarding exercise, must be related to muscularity; and the upper torso must be included in questions about body regions. Overall, they note a number of methodological weaknesses in extant measures. Thus, although measures do exist related to male body image, at this point the limitations of many of these measures arguably proscribe substantial findings. Thus, scale development is still an important goal in this area.

Another important next step in this literature is to utilize measures sensitive to male body image to investigate the correlates of male body image, which is one way to assess the practical import of this construct. In other words, is negative body image tied to negative physical and psychological outcomes, such as depression and eating disorders? If so, how prevalent are such concerns in men? Are there ways to intervene to improve body image perception that can impact these other sequelae? At the moment, these are largely unanswered and unexplored questions. For a field such as Counseling Psychology, where research can be strongly tied to clinical practice, the practical implications of these questions are hard to ignore.

Currently, there are observational and theoretical data supporting potentially harmful correlates of negative body image in men, such as steroid abuse, depression, and low self
However, up to this point, given a general dearth of examination, empirical support for such trends is lacking, certainly in comparison to the state of such strong findings in the literature regarding body image in women (Garner & Garfinkel, 1982; Holson, Kraft, Roysamb, 1981; Lerner, Knapp, & Orlos, 1973; Mintz & Betz, 1986; Rierdan & Koff, 1997; Silberstein, Striegel-Moore, Timko, & Rodin, 1988). Although a small number of studies have found support for such relationships as previously noted, others have found no support (Brownell, 1981; Fallon & Rozin, 1985; Pliner, Chaiken, & Flett 1990). Furthermore, given the state of measurement in the male body image area, the validity of many of the extant findings is questionable. Thus, investigating such relationships is still an important task in this area.

Furthermore, the relationship between body image and indicators of more positive adjustment is a question rarely examined in the body image literature as a whole. Most studies focus on indices of negative adjustment (e.g. the presence of symptoms) rather than also considering indicators of positive psychological adjustment. Given the increasing recognition of the importance on inner strengths (e.g. Seligman, 1995), this is a major omission in the general body image literature.

The overall purpose of the current study was to add to the male body image literature, given the current limitations. More particularly, the aim of this study was to utilize a recently designed male body image measure to investigate the relationship between male body image and salient psychological outcomes, while also further exploring the psychometric properties of this scale. This measure, the Male Body
Attitudes Questionnaire (Tylka, Bergeron, & Schwartz, in press), addresses several limitations of current measures. First, this scale incorporates items measuring both satisfaction and preoccupation, since researchers (e.g., Mazzeo, 1999) have asserted that satisfaction and preoccupation address slightly different components of body image. Interestingly, factor analyses of the MBAS suggest that these factors are not distinct constructs in men. Although not psychometrically separate, inclusion of items assessing preoccupation makes the MBAS a more comprehensive scale.

Another advantage of the MBAS is that it is an overall measure of body image dissatisfaction. Other extant measures that appear to have some reliability and validity for men, such as the DMS (McCreary & Sasse, 2000) and DMAQ (Morrison et al., 2003), focus only on muscularity. Although muscularity appears to be a central aspect of body image concerns in men in general, it is not the only factor. Thus, the MBAS separates muscularity from the general construct of body dissatisfaction. In this regard, another disadvantage of some extant measures is the failure to assess both muscular size and leanness, two different constructs that may be of differential importance among men. The MBAS separates these related but distinct constructs.

Another general disadvantage of extant measures is a failure to adequately represent body image concerns relevant to men. To address this, the items of the MBAS were derived from self-reports of men in qualitative studies addressing male body image concerns (Ridgeway & Tylka, in press). Thus, this measure attempts to reflect the concerns voiced by actual men. In this regard, it does not assume that body image concerns derived from the study of women are adequate representations of male body image concerns.
One goal of this study is to further explore the psychometric properties of the MBAS. Particularly, this study aims to replicate findings on reliability and further demonstrate the convergent and concurrent validity of this measure. Given the problems that have plagued extant measures, the number of measures that can be reasonably used for studying convergent validity are limited. In this study, two extant measures will be utilized. Hypotheses related to these goals are that the MBAS and its subscales will demonstrate adequate internal consistency reliability ($\alpha > .70$) as they have done previously, and will demonstrate convergent validity [$r$s ranging from .30-.50] with several other extant measures of male body image. Several hypotheses also further explore the validity of the MBAS and its subscales. It is hypothesized that the muscularity subscale of the MBAS will be strongly correlated to the other measures of male body image, given that these measures focus on muscularity, while the low body fat and height subscales will not be correlated with these scales. Furthermore, as a test of concurrent validity, it is hypothesized that the low body fat subscale will be correlated with the weight and body mass index of the participants, and that the height subscale will be correlated with the height of the participants.

In regards to the goal of examining the relation between male body image and salient psychological outcomes, the hypotheses of this study are as follows. It is hypothesized that there will be correlations between levels body dissatisfaction and a number of psychological outcome variables: positive correlations with symptoms of psychological distress (depression, overall symptom reports, and self-esteem); and negative correlations with measures of positive psychological adjustment (subjective well-being, proactive coping, hardiness, and optimism). Relevant demographic data will be gathered,
including weight, height, educational status, age, sexual orientation, sports participation, recreational fitness activity participation, and weightlifting participation. It is hypothesized that these variables will not moderate the previously mentioned relationships.

Furthermore, it is hypothesized that the indices of positive psychological adjustment (satisfaction with life, proactive coping, hardiness, and optimism) will moderate the relationship between body dissatisfaction and the indicators of psychological distress (depression, symptom reports, self esteem). In other words, it is hypothesized that the positive psychological variables will serve a buffering role. If participants have high levels of these psychological resources, it is predicted this well serve as a protective factor, decreasing the symptoms of psychological distress that tend to occur with body dissatisfaction. Appendix A graphically represents this hypothesized nomothetic model.

It should be noted that this study is limited to examining body image concerns in young men (for the purpose of this study, defined as age eighteen to thirty). Given potential age differences in the nature of body image concerns (McCabe & Ricciardelli, 2004), as well as the differential exposure to body image messages via the media across generations (Labre, 2002; Leit, Gray, & Pope, 2002), age comparisons are an important step in exploring body image. Such comparisons will not be a part of this study, however, for the sake of making this study more focused, as well as more manageable. Furthermore, other comparisons, such as those based on ethnicity and those based on sexual orientation, are important next steps, although they will not be the focus of the current study.
Although this study will utilize a variety of psychological outcome variables, these variables can be unified under the more general category of psychological health. It must be noted that psychological health is a broad term that can have many definitions, and many measurements. However, a common approach in the literature is to use salient dimensions of symptomatology as a gross measure of psychological health (Bryk & Raudenbush, 1987; Feinson & Thoits, 1986; Jones & Meredith, 2000; McCreary & Sasse, 2000). Such an approach, although not necessarily assessing the dynamics of optimum psychological health, does indicate overall whether a person is likely experiencing disturbance in psychological health or not. A complementary addition to such an approach is to also incorporate the assessment of indices of positive adjustment. Such an approach of recognizing psychological traits that may indicate better than average psychological health is consistent with the recent focus on positive psychology within the general area of psychology (Seligman, 1998), along with the focus on strengths within the area of Counseling Psychology (Gelso & Fretz, 2001). Therefore, this study will use this approach of utilizing multiple measures of positive and negative psychological symptoms to give a broad measurement of this general construct. It should be noted that since the psychological traits that make up better than average psychological health are not as well understood as those that constitute poor psychological health (Valliant, 2004), the constructs used in this study can not be described as fully representative of optimum functioning, only as potentially suggestive indices.

For the purposes of this study, three variables will be used as measures of negative psychological outcomes, or psychological distress: depression, symptom reports, and self-esteem. These three variables are often examined by researchers when interested in
psychological outcomes (e.g. Alkhadher, 2004; Bryk & Raudenbush, 1987; Feinson & Thoits, 1986; Jones & Meredith, 2000; Ireland, 2005; Timmerman, 2004). Although these three constructs are not comprehensive indicators, they are three global indices that are very suggestive of psychological distress, and also highly correlated with other symptoms of distress (Goldberg & Hillier, 1979; Radloff, 1977; Rosenberg, 1965). Although other constructs could also certainly be included (for example, anxiety, or neuroticism), for the purposes of this study, a small number of broad constructs were considered desirable. Adding constructs would lead to adding additional analyses, increasing the risk of type I errors.

Given Valliant’s (2004) previously noted caution that the psychological traits that make up better than average psychological health are not as well understood as those that constitute poor psychological health, the selection of constructs reflecting positive psychological adjustment was more difficult and more explorative in nature for this study than the selection of constructs reflecting psychological distress. After reviewing the literature on positive psychology, four potentially promising constructs often identified in theoretical literature as variables that may reflect and promote psychological health were selected for this study: subjective well-being (Diener, Lucas, & Oishi, 2002), psychological hardiness (Kobasa, 1979), proactive coping (Aspinwall & Taylor, 1997), and optimism (Carver & Scheier, 2002). Furthermore, these constructs were selected because among the comparatively less examined variables in positive psychology, these four constructs have extant scales that demonstrate psychometric reliability and validity. Similarly to with negative psychological outcome variables, other constructs could also certainly be included, but the purposes of this study, a small number of broad constructs
were considered desirable. Thus, although not a comprehensive reflector of psychological health, these four constructs have empirical and theoretical support as significant aspects of overall health. Additionally, there is extant empirical evidence supporting the role these constructs can play in moderating, or buffering, the relationship between stressors and health outcomes (Carver, Pozo, Harris, Noriega, Scheier, Robinson, Ketcham, Moffat, & Clark, 1993; Suldo & Huebner, 2004; Younkin & Betz, 1996), which further supports the use of these constructs in the hypotheses of this study. That is, given evidence that these constructs can serve a buffering function, it seems reasonable to hypothesize that these constructs might serve similar buffering roles with other stressor and outcome variables, including the variables examined in this study (body image dissatisfaction and psychological distress).
CHAPTER 2

LITERATURE REVIEW

There is a vast literature concerning the area of body image, and a considerable literature directly or indirectly relating to the construct of psychological health. Along with a focus on theory and instrument development, numerous studies exist linking both areas to a variety of other psychological constructs. Therefore, giving an overview of both areas would be an enormous task. For the purposes of this review, the coverage of each area will be proscribed.

The review of body image will be limited to literature apropos to male body image, as there exists an even larger body concerning female body image. As previously discussed, research on men makes up a proportionally smaller part of this literature. In general, whenever men have been involved in studies, it has been to examine sex differences. Despite this general trend, more recently there has been a growing number of studies on men. This review will take place therefore in two forms: a review of literature highlighting sex differences in body image, and a review of literature focusing solely on body image in men.

The literature incorporating psychological health is also quite diverse. Literature exists applying this theory to various psychological phenomena. For the purposes of this
review, focus will be limited to highlighting two review articles that illustrate common theoretical conceptualizations of this construct, along with several articles illustrating how the indices of positive adjustment used in this study have been examined as buffers.

Overall, this literature review has several purposes. First, to show that body image issues are salient issues for men. Second, to show body image issues are qualitatively different for men and women. Third, to show that socio-cultural pressures may be increasing the salience of body image consciousness for men. Fourth, to show that muscularity is an aspect of body image important to men. Fifth, to demonstrate how psychological health can be understood from a variety of standpoints, and to provide support for the perspective taken in this study. And sixth, to briefly discuss model studies that demonstrate how the positive psychological health constructs utilized in this study can be conceptualized as buffering variables.

Sex Differences In Body Image

Before discussing literature supporting the basis for this study, it is important to note that there are some extant studies related to sex differences in body image that suggest body image issues are not salient issues for men. Erik Erickson, in Identity: Youth and Crisis (1968), postulates that physical attributes play an important role in identity formation. However, according to Erickson, the meaning of these attributes differs for the sexes. Identity in women tends to be based around attractiveness, how well they can attract a mate. For men, identity tends to be formed around how they act in the world. Thus, for women, their body is important in and of itself, while for men, it is not so much their body but what it does that is important. It follows that threats to these attributes in
each sex will lead to corresponding identity problems. In other words, body image issues are likely to be a central identity issue across women given that perception of the body is related to perception of attractiveness, while body image issues are not important to the identity of men, and thus shouldn’t be a salient concern.

Lerner, Knapp, and Orlos (1976) examined Erickson’s theory empirically. Specifically, they looked at how body attitudes predicted self-concept in late adolescence. Body attitudes regarding the perceived attractiveness and effectiveness of 24 body parts (e.g. thighs, nose, and chin) were examined. They found that high perceptions of attractiveness indicated positive self-concept in women. On the other hand, they found that high levels of effectiveness indicated positive self-concept in men. This empirical finding supports Erickson’s theory, suggesting that body image is important for the identity of women of general, but not important to the identity of men. Similarly, Brownell (1991) examined self-esteem in men and women. Women’s self-esteem tended to be predicted by their beauty ideals. On the other hand, men’s self-esteem tended to be based on a variety of factors such as intelligence, economic status, and physical prowess. Thus, this study also supports Erickson’s theory, suggesting body image is central in the identity of women, but only a minor part, if even relevant, in the identity of men.

One more study will be reviewed that does not support the hypothesis that body image issues are salient for men. Rozin and Fallon (1988) compared men and women in terms of body image, attitudes towards weight, and misperceptions of figure preference. Questionnaires designed for this study were administered to 97 families. This included: 55 daughters, 42 sons, 97 fathers, and 97 mothers. Participants were presented with nine figure drawings, and asked to indicate the value that best represented their current
appearance, their ideal appearance, and the appearance they thought was most attractive to the opposite sex. Participants also answered several one-item questions regarding concern about weight, feelings of guilt about eating, and dieting. All groups but the sons considered their current weight heavier than their ideal. Mothers and daughters believed that men prefer much thinner figures than the men actually preferred. Mothers and daughters also showed concern over weight and eating. Fathers and sons were relatively unconcerned about weight and eating. The authors conclude that sex, rather than generation or self and ideal discrepancy, is the major factor in weight concern.

These studies all have a common theme: in comparing men and women, the conclusion is that body image is important for women and not so for men. Thus, these studies suggest that studying male body image is not needed, since it is not a concern relevant to men. These studies are model representations of the theoretical and empirical body image literature prior to the past two decades. It is important to consider the shortcomings of these studies in light of more recent developments in the study of body image. For example, the studies of Lerner et al. (1976) and Brownell (1991) focus on bodyparts, such as the thighs and chin, and body image elements, such as thinness, more likely to be concerns for women. Body image concerns relevant to men, such as muscular size and definition, and body parts such as the arms and shoulders, are not equally represented. Thus, the measurement of body image in men is not valid in these studies. Furthermore, the figure drawings used in Rozin and Fallon’s study (1988) do not adequately represent dimensions of muscularity in men (muscular size and muscular definition), making this scale of limited use in examining male body image.
More recent studies suggest empirically that these findings are not conclusive. The following studies reviewed also examine sex differences in body image, but support the conclusion that body image affects men as well as women. Mintz and Betz (1986) examined sex differences in body image correlates. The Body Cathexis scale (Jourard & Secord, 1955) was used to measure body satisfaction. A general trend was found for women to perceive themselves as overweight, and to subsequently desire to lose weight. In contrast, men who were dissatisfied tended to perceive themselves as underweight, and subsequently desired to gain weight. For both sexes, body dissatisfaction was related to lower self-esteem and greater depression proneness.

Betz, Mintz, and Speakmon (1994), in a continuation of the previous study, examined gender differences in accuracy of self-reported weight. Women were found to underreport their weight significantly more than men. It was also found that normal weight women perceived themselves as overweight, while normal weight men perceived themselves as underweight. This supports the findings of the previous study, suggesting that there are significant gender differences in the nature of body image concerns.

McCauly, Mintz, and Glenn (1988) examined the relationship between body image, self-esteem, and depression proneness. One hundred and three females and 73 males took the Body Cathexis Scale, the Depression-Proneness Inventory (Abramson & Metalski, 1983), the Janis-Field Feelings of Inadequacy Scale (Robinson & Shaver, 1973), and a background questionnaire. Overall, women reported more body dissatisfaction than men. However, different patterns emerged, with underweight men expressing the most dissatisfaction among men, and with normal and overweight women expressing the most dissatisfaction among women. Women on average desired to weigh
8.5 lbs less, while men on average desired to weigh 3 lbs more. Both sexes showed distortions, with women tending to perceive themselves as larger, and men perceiving themselves smaller, although the effect for women was larger. Higher levels of body satisfaction were related to higher levels of social self-esteem in both genders. Also, higher levels of body satisfaction were associated with lower levels of depression-proneness in men only. This study suggests that even if women experience more dissatisfaction than men, this does not mean that body dissatisfaction is not a practically important issue for men.

Silberstein, Striegel-Moore, Timko, and Rodin (1988) assessed the behavioral and psychological implications of body dissatisfaction in men and women. Forty-five female and 47 male participants took three measures of body dissatisfaction: Body Size Drawings (Fallon & Rozin, 1985), the Body Esteem Scale (Franzoi & Shields, 1984) and a measure of current and ideal weight. Participants also took the Rosenberg Self-Esteem scale (Rosenberg, 1965), the Eating Attitudes Test (Garner, Olmsted, Bohr, & Garfinkel, 1982), and Reasons for Exercise Inventory, which was developed for this study. Men and women showed no differences in degree of body dissatisfaction across the three measures. Men tended to want to be heavier, while almost no women wished to be heavier, instead wanting to be thinner. Overall body esteem was correlated with self-esteem for both men and women. Also, women tended to exercise for weight control more than men, and exercising for weight control was associated with disordered eating.

Drewnoski and Yee (1987) examined body weight satisfaction in men and women. They found that 85% of the women wanted to lose weight. In comparison, 40% of men wanted to lose weight, and another 45% of men wanted to gain weight. Thus, the same
number of men and women expressed dissatisfaction with their weight, but men and women differed in the nature of their dissatisfaction. Furthermore, men reported using exercise more often to control weight, while women focused more on dieting.

Muth and Cash (1997) examined the effect of gender on body image attitudes. A total of 136 men and 141 women were given four measures: the Multidimensional Body-Self Relations Questionnaire (Brown, Cash, & Mikulka, 1990), the Body Image Ideals Questionnaire (Cash & Szymanski, 1995), the Situational Inventory of Body-Image Dysphoria (Cash, 1994), and the Body Image-Affect Inventory (Szymanski & Cash, 1995). Women tended to have more negative body image evaluation, greater investment in their appearance, and more frequent cross-situational body image dysphoria. For both men and women, evaluation and investment predicted body-image affect. Body weight and body image evaluation/affect were linearly related for women, but curvilinearly related for men. Thus this study also suggests that while both men and women are affected by concerns about being overweight, men also experience notable concerns about being underweight.

Vartanian, Giant, and Passino (2001) investigated mass media, interpersonal feedback, and gender as predictors of satisfaction with body thinness and muscularity. One hundred sixty seven females and 111 males took the Body Esteem Scale (Mendelson, White, & Mendelson, 1997), Dual Dimension Figure Rating Questionnaire (Stunkard, Sorenson, & Schulsinger, 1983), Sociocultural Factors Questionnaire (Levine, Smolak, & Hayden, 1994), and the Bem Sex Role Inventory (Bem, 1974). Women were found to have lower overall scores on average than the mean on the measure of overall body satisfaction. Men were split between those wanting to be thinner and wanting to be
heavier, whereas most women wished to be thinner. Both genders were concerned with improving muscul arity, but men were significantly less satisfied with their current muscul arity than women. Men and women were affected by media, teasing, and criticism in similar ways. High instrumentality was related to higher overall body satisfaction in both genders, and also to greater dissatisfaction with current muscul arity. However, in the context of the other variables studied in a regression analysis, instrumentality did not make substantial contributions towards explaining variation in body satisfaction.

McCreary and Sasse (2000) explored the drive for muscul arity in boys and girls. They described the presence of a drive for thinness among girls that has been repeatedly supported by research, and postulated the presence of a drive for muscul arity in males. These drives are similar in that they are both related to sociocultural messages, and it is postulated that like the drive for thinness the drive for muscul arity may be potentially related to negative consequences, both physiological (overeating, steroid use) and psychological (lower self-esteem and higher rates of depression).

A 15-item Drive for Muscul arity scale (DMS, McCreary & Sasse, 2000) was created for this study to begin empirical exploration of this construct. One hundred ninety seven high school students (101 girls and 96 boys) participated in the study. They completed the Drive for Muscul arity scale, measures related to involvement in weight-training, the Rosenberg Self-Esteem Inventory, the Center for Epidemiologic Studies Depression Scale (CES-D), the Eating Attitudes Test (EAT), and the Body Dissatisfaction subscale from the Eating Disorders Inventory (EDI). The DMS demonstrated good reliability. Individuals likely to score high on the DMS were boys trying to gain weight and muscle mass. Results suggested that DMS scores were related to poor self-esteem and higher
levels of depression in boys, but not in girls. The drive for muscul arity was also unrelated to the drive for thinness. Thus, this study clearly demonstrates the salience of muscul arity in men, which does not appear to be a comparable concern in most women. Furthermore, this study also offers some tentative evidence of relation between drive for muscul arity and depression, supportive of the main hypothesis in the present study.

It is important to note that the DMS is one of the few extant male body image measures that appears relevant to male body image concerns, while demonstrating an encouraging level of reliability and validity. However, it is also important to note its limitations. First, because of its inclusion of behavioral items, the DMS is not purely an attitudinal measure of body image (McCreary, Sasse, Saucier, & Dorsch, 2004). Furthermore, drive for muscul arity and body image attitudes perhaps should be considered somewhat conceptually different constructs for men. After all, among women, drive for thinness and body image attitudes are thought of as two distinct, albeit correlated, constructs, as each represents a different subscale on the Eating Disorder Inventory-2 (Garner, 1991). Thus, although the DMS is an important addition to the literature useful in examining muscul arity, it should not be considered an overall body image measure for men.

Overall, the research on sex differences in body image tends to suggest that there are definite differences between men and women. For women, the presence of negative body image has been shown consistently. A strong tendency to desire weight loss tends to be found, and a thin ideal is the desired outcome. For men, negative body image findings have been mixed, although most findings that contraindicate the presence of body image concerns in men predate findings that support the presence of such concerns. When
significant body image dissatisfaction is found for men, men also desire to gain weight, in
sharp contrast to women. This difference may be related to a drive for thinness in women,
and a drive for muscularity in men. It appears that previous findings in the literature may
be partly due to applying improper models, and subsequently invalid measures, of body
image to men. Overall, since these findings suggest gender differences related to body
image, support is offered for the general purpose of this study: to focus more closely on
examining the issue of body image for men.

*Body Image Research on Men*

Not all research on body image has compared differences between men and women.
Rather, other studies have focused on solely examining male body image. These studies
overall appear to suggest that comparing body image between men and women is
troublesome, as the constructs that are relevant across genders can differ. Therefore, these
studies have focused primarily on identifying factors specific to body image in men.

Tucker (1982) investigated the relation between perceived physique and ideal
physique. The Perceived Somatotype Scale was developed and used in this study to
determine whether perceived somatotype influences scores on the Body Cathexis scale
(Jourard & Secord, 1955). The Perceived Somatotype Scale involves seven pictures of
physique, representing the range of somatotypes (ectomorphic/skinny on one end,
mesomorphic/muscular in the middle, and endomorphic/fat on the other end. In general,
the more one’s perceived physique differed from his ideal, the more body dissatisfaction
he reported. Mesomorphs (muscular, low body fat) were found to have the most body
satisfaction. Another study by Tucker (1984) examined self and perceived somatotype in
comparison to extraversion, neuroticism, and body dissatisfaction. Again, mesomorphs reported the best outcomes. Furthermore, discrepancies between ideal and self-perception again were associated with negative outcomes.

Petrie, Austin, Crowley, Helmcamp, Johnson, Lester, Rogers, Turner, and Walbrick (1996) paralleled earlier studies examining portrayals of women in fashion magazines in order to examine socio-cultural expectations of attractiveness for males. Pictures of males in Gentleman’s Quarterly and Esquire were examined over 32 years. Chest, shoulder, and waist measurements of pictures meeting specific criteria (shirtless or tight shirt, with model at less than a 45 degree angle to the camera) were taken. Chest to waist and shoulder to waist ratios were compared. There were no significant changes in these measurements over time.

Pope, Gruber, Choi, Olivardia, and Phillips (1997) identified muscle dysmorphia, a subtype of body dysmorphic disorder. Muscle dysmorphia involves a pathological preoccupation with one’s degree of muscularity. This disorder was originally referred to as reverse anorexia. It can lead to distress, impairment in relationships and work, and is often comorbid with eating disorders, obsessive-compulsive disorder, and mood disorders.

Muscle dysmorphia tends to be related to whole body dissatisfaction, as opposed to other body dysmorphic disorders which focus on single body parts. This disorder is also closely related to increased exercise. The primary focus is on exercise with diet as a secondary focus, in contrast to eating disorders where the reverse is true. This disorder is more prevalent in men than women, and is particularly prevalent in bodybuilders.
Furham and Calnan (1998) investigated eating disturbances, self-esteem, reasons for exercising, and body weight dissatisfaction among adolescent males. One hundred and forty three teenage males took the Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983), Reasons for Exercise measure (Silberstein et al., 1988), and the Rosenberg Self Esteem scale. The sample was divided into three groups based on discrepancy between ideal and actual weight: those with a larger ideal, those with a thinner ideal, and those whose idea and actual weight matched. Results suggested males dissatisfied with their bodies were equally divided between those wishing to gain weight and those wishing to lose weight. No relationship was found between self-esteem and body weight dissatisfaction. Exercising for physical tone, attractiveness, health, fitness, and weight control were all positively related to disordered eating, but exercising for mood and enjoyment were found unrelated.

Cohene and Pope (2001) reviewed body image research on boys. In general, boys have been found to have less body image concern than girls. Still, many boys report body dissatisfaction. This dissatisfaction is associated with lowered self-esteem and increased distress. Furthermore, they also noted that boys tend to be concerned with getting bigger, while girls want to be smaller.

Pope, Olivardia, Gruber, and Borowiecki (1999) examined the evolving ideals of male body image as seen through action toys. Measurements were taken of several popular action toys that have been manufactured for the past 30 years. Height, waist, chest, and biceps were measured for these toys, and then the measurements were extrapolated to a height of 70 inches. These measurements revealed definite changes in the figures of action toys over time. Specifically, action figures have become much more
muscular over time. While older toys resemble the average male, many contemporary figures exceed the musculature of even the largest human bodybuilders.

Leit, Pope, and Gray (2001) examined cultural expectations of musculature in men through the evolution of playgirl centerfolds. The body mass index and fat-free mass index for 115 male centerfolds in Playgirl from 1973 to 1997 was calculated. A significant correlation between these measures and the date was found, indicating an increase in musculature over time.

Stephen Edwards and Catherine Launder (1999) developed the Swansea Muscularity Attitudes Questionnaire in order to examine musculature concerns in males. Factor analysis of items revealed two underlying constructs: one reflecting the desire to be muscular and goal-oriented behaviors, and the second perceived positive attributes of musculature. A final 20-item scale was developed and given to 303 normal male subjects. The two-factor structure was confirmed. Cronbach’s alpha was high for both scales (.94 for Drive for Muscularity scale, and .91 for Perceived Attributes of Musculatory scale.

Lynch (1999) assessed figure preferences in men. In contrast to the figures commonly used in research developed by Stunkard, Sorenson, and Schulsinger (1983), the figures used in this study illustrated differing degrees of musculature rather than of bodyfat. One hundred and two men and 101 women participated, divided among university students and adults. Men filled out demographic data and chose from the nine figure drawings (ranging from not muscular to very muscular) the one representing their current figure, ideal figure, the figure other men would consider ideal, and the figure most women would find attractive. Women indicated their age and picked the male figure most attractive to them, most attractive to other women, and the figure males would consider ideal.
Satisfaction was first measured by comparing current and ideal images. A difference of 5 or greater was considered dissatisfaction, and less than 5 satisfaction. 83.72% of the college men wished to be larger, while 44.07% of the adult men wished to be larger. More adult men, 30.51%, were satisfied than college men, 16.28%. 25.42% of the adult men wished to be smaller, while no college men did. College men had higher mean difference scores than adult men. College women chose an ideal male figure smaller than what college men thought, while adult men and women showed no significant differences. A Likert scale rating of satisfaction suggested that both adult and college men are relatively satisfied with their bodies, with no significant differences between the two. The authors suggest that, although men may have notable differences between their ideals and self-perception, this does not necessarily imply dissatisfaction. Men may realize that their ideals are unattainable and be happy with their body. Compared to previous research, it is suggested that young men desire increased muscle mass while older men desire less body fat (Rozin & Fallon, 1985).

Pope, Gruber, Mangweth, Bureau, deCol, Jouvent, and Hudson (2000) examined body image perceptions among men in three countries. The Somatomorphic Matrix, a computerized test designed by the authors (Gruber, A., Pope, H., Borowiecki, J., & Cohane, G., 2001), was utilized in this study. This program presents a matrix of 10x10 pictures, ranging on axes of muscularity and fatness. Subjects pick the image that best represents their own body, their ideal body, the average man, and the body most desired by the opposite sex. Height, weight, and body fat were measured for college-aged men in Austria (n=54), France (n=65), and the United States (n=81). They then responded to the matrix questions. The actual measurements of the men were compared to that of the
images they chose. In all three countries, men chose an ideal body with a mean of 28lb more muscle than themselves, and males estimated that women preferred a male about 30lbs more muscular than themselves. By contrast, women in a pilot study preferred an average male figure. Thus, there appears to be a strong misconception among men in what they believe women consider an attractive male body. It should also be noted, however, that subsequent studies (Cafri, Roehrig, & Thompson, 2004) have found that the test-retest reliabilities of most of the assessment protocols for the Somatomorphic Matrix fall under a generally acceptable level of .70, suggesting that steps need to be taken to improve the psychometric properties of this instrument before results from it can be interpreted meaningfully.

Leit, Gray, and Pope (2002) examined the effect of media representations of male bodies on men’s attitudes towards their own appearance. This study used methodology similar to previous studies on women (Kalodner, 1997). Eighty-two male participants were shown slides from popular magazines. The control condition saw either no human images or images not focused on the body. The experimental condition, 10 neutral slides were included with 20 slides featuring images of ideal male bodies. These figures were selected from ratings by 10 college-aged men on whether the images were muscular, attractive, and sexually provocative. Images with highest scores for being muscular and attractive were used, and images with a mean score of 5 or higher for sexually provocative were eliminated from consideration. These participants then took the Somatomorphic Matrix. The experimental group displayed a significantly greater discrepancy between their current and ideal fat free mass index (a measure of muscularity), suggesting higher body dissatisfaction in the experimental group. Of note,
no significant differences were found for body fat. This suggests that media images can affect men’s views of their bodies. However, given these previously noted methodological weaknesses of the Somatomorphic Matrix, these results should be interpreted with caution.

In a similar type of study focusing on the effect of media exposure on male body image, Agliata and Tantleff-Dunn (2004) exposed 158 males to television advertisements containing either ideal (experimental group) or neutral (control group) images of male bodies, which were inserted in between segments of a television program. Participants were blocked on dispositional body image factors to investigate moderating effects. Results of this study indicated that participants in the experimental group became significantly more depressed and indicated higher levels of muscle dissatisfaction than participants in the control condition. Dispositional factors did not demonstrate any effect on these results. This study seems to support the results of the Leit, Gray, and Pope (2002) study, suggesting that media images (in varying formats) can have marked effects on the mood and body image perception of men. Combining such findings with implications that sociocultural messages related to muscularity are increasing (Mishkind et al., 1986; Pope et al., 1999; Labre, 2002), this again supports the notion that the practical significance of studying male body image is also increasing.

Morrison, Morrison, and Hopkins (2003) explored the drive for muscularity in Canadian men. The authors describe how sociocultural theory and social comparison theory have been used to explain body image in general. First of all, sociocultural theory posits that sociocultural influences, particularly exposure to idealistic representations depicted in mass media, leads to increased body image investment and less favorable
body image evaluation. Social comparison theory states that individuals tend to compare themselves to others, and subsequently evaluate themselves. Comparisons can be upward (comparing oneself to others better off on the dimension) or downward (comparing oneself to others worse off on the dimension). The authors aim to use these theories to explore the drive for muscularity in men.

Two studies were completed towards this goal. In the first study, 310 men completed the Drive for Muscularity Attitudes Scale (DMAQ, Morrison et al, 2003), a magazine checklist, and the Universalistic Social Comparison scale. The results of this study suggested that exposure to media containing idealistic images of the male body and self-reported comparison were positively related to drive for muscularity. The second study involved three open-ended questions intended to qualitatively explore men’s beliefs about muscularity. One hundred thirteen male students completed these questions. Answers suggested that men most often reported social and physical benefits as being particularly important in the desire to become more muscular. Only a minority of the answers directly reflected sociocultural and social comparison explanations of the drive for muscularity.

In a similar article, Morrison, Morrison, Hopkins, and Rowan (2004) again explored the drive for muscularity in Canadian men. In this article, the authors go in to more depth regarding extant body image measures. They describe several notable limitations of the DMS: a restricted range of responding for female respondents, which may affect findings regarding differential salience for men and women; a lack of reverse-scored items; and a mixture of attitudinal and behavioral items. In this regard, the authors developed the DMAQ, which attempts to address such limitations. The authors describe three studies towards the development of this scale. Results include satisfactory reliability, a
unidimensional factor structure, negative correlation between the drive for muscularity and level of appearance self esteem and a positive correlation with vanity, and a positive correlation between drive for muscularity and indexes of body image investment such as weightlifting and protein consumption. Despite these positive findings reported in these studies, two limitations of the DMAQ are notable: first, this scale does not assess both preoccupation and satisfaction; second, this scale does not assess both leanness and muscular size, instead measuring only increase in muscular size. Thus, although this measure may assess satisfaction with muscle size, it is important to note this measure is not an adequate measure of overall male body image concerns, as it fails to assess other salient dimensions.

Olivardia, Pope Gruber, and Borowiecki, and Cohane (2004) examined the relationship between muscularity and depression, self-esteem, and eating disorder symptoms. One hundred fifty four male college students completed the Somatomorphic Matrix, Beck Depression Inventory, Rosenberg Self Esteem Scale, Eating Disorders Inventory, and the Confidential Behavior Exercise Survey. Results indicated that participants displayed substantial body dissatisfaction, which was related to depression, low self esteem, eating pathology, and the use of performance enhancing substances. The authors conclude that muscle belittlement, the perception in men that one is less muscular than he is, is an important construct in the body dissatisfaction of men. Although the results of this study should be interpreted with caution, given the previously mentioned concerns regarding the Somatomorphic Matrix, this study offers tentative evidence of the relationship between body image concerns and psychological health in men, supporting the hypotheses of this study.
Given the growing number of methods for measuring male body image, as many of the previously described studies illustrate, Cafri & Thompson (2004) provide a review of the current methodology in this area. They highlight three important criteria for measures in this area: evaluating a muscular appearance; items indirectly related to body appearance, such as regarding exercise, must be related to muscularity; and the upper torso must be included in questions about body regions. Overall, they note a number of methodological weaknesses in extant measures. For example, many measures do not adequately measure muscularity concerns in depth. Another example, relating to silhouette drawings, is a failure to discern variations in adipose level and muscular development. Thus, although measures do exist related to male body image, at this point the limitations of many of these measures arguably proscribe substantial findings. Thus, scale development is still an important goal in this area. The authors conclude that the DMS scale and a revision of the Somatomorphic Matrix made by the authors that improves its test-retest reliability are currently the most effective extant measures.

Finally, a recent qualitative study offers a different yet complimentary perspective on the previously discussed findings. Grogan and Richards (2002) led a series of focus group with men and boys, including four eight year olds, four thirteen year olds, eight sixteen year olds, and four young adults. These groups were oriented towards having participants discuss amongst themselves topics such as exercise, body shape, weight, and diet. Across all groups participants linked muscularity and leanness with being healthy, fit, confident, and powerful, while conversely, being fat was linked to weakness. Several participants described peer pressure to be slender and muscular, and experiences of teasing. Such
descriptions seem consistent with notions that men are becoming more aware of and concerned about their bodies.

Overall, several themes emerge from these findings. Body image appears to be an important issue for men. Muscularity tends to be a salient aspect of body image in men that can be distinguished from body image issues for women. Many men desire to be more muscular, and also believe that women find more muscular men attractive. A general increase in societal messages favoring a more muscular and idealized male figure may be related to these changes.

Psychological Health

The literature on psychological health is quite varied, in no doubt due to the varied nature of this term. Across disciplines such as psychology, psychiatry, and sociology, as well as within these disciplines, there are many differing definitions and measures related to psychological health (Jones & Meredith, 2000). It may be helpful to consider some of these varying approaches to elucidate the myriad ways “psychological health” can be conceptualized. Two articles that broadly overview this subject will be used to illustrate this breadth.

Jones & Meredith (2000) describe the literature on developmental paths of psychological health. They describe a common trend in this literature is to use measures of psychological symptoms, such as the BDI (Beck, 1967), CES-D (Radloff, 1977), and Hopkins Symptom Checklist (Derogatis, 1983). Other studies often rely on single, broad items, such “In general, how do you feel about your life these days?” Other studies explore psychological health more by measuring more complex and abstract
psychological constructs such as positive and negative emotionality, impulse strength, expressivity, ego development, and psychological defense. These authors also note that the self-report nature of such measures may limit their use. Given the noted lack of convergence between clinician reports and client reports, these authors argue that clinician measures of psychological health are better measures, in that they are not contaminated by self-interest or defensiveness (a view which does not seem to take into account the varied other biases that can affect clinicians). Nevertheless, these summaries from the literature illustrate a variety of ways of conceptualizing and measuring psychological health, from straightforward single items measures reflecting a simple construct to complex Q-sort ratings by clinicians reflecting a more abstract, complex construct.

Another helpful description of the literature on psychological health is provided by Vaillant (2003). Using the term mental health, Vaillant elucidates six historical models for conceptualizing mental health. The first, the “above normal” model, is typified by the GAF of the DSM-IV, and illustrates a view that mental health is exemplified by superior functioning in a wide range of life activities. A second model, the positive psychology model, focuses on psychological components, such as wisdom, justice, optimism and temperance, that reflect a high state of mental health, as well as providing a way to intervene and increase one’s health. A third model reflects maturity as mental health, and is typified by stage model’s such as Erickson’s which describe the developmental tasks that one must succeed in to be mentally healthy. A fourth model, social-emotional intelligence, equates mental health as being most related to level of emotional intelligence. A fifth model, subjective well-being, reflects a view that one must perceive
oneself as being healthy in order to be healthy, irrespective of expert definitions. A final sixth model, resilience, equates mental health with the coping mechanisms one uses to adapt to change. Valliant summarizes that these perspectives all describe aspects of the construct mental health, but fail by themselves to fully explain this broad construct.

These two reviews alone illustrate the varied ways of conceptualizing the construct psychological health. The literature to date has provided little by way of consistency or conceptual unity. Thus, there is no current common definition of this construct, or accepted way to measure it. For the purposes of this study, rather than attempt to synthesize all the extant perspectives on this topic, only one approach will be taken. This study will approach psychological health from the vantage of the presence or absence of salient psychological symptoms and strengths. It is important to be aware of what such a perspective does not do, and how ultimately it is a limited way of considering psychological health.

This study also hypothesizes that the four constructs reflecting positive psychological adjustment will serve a buffering role in reducing the relationship between body image dissatisfaction and psychological distress. Such a buffering hypothesis is not uncommon in the literature. Thus, it may be helpful to briefly describe several model examples related to the four constructs in question: satisfaction with life, psychological hardiness, proactive coping, and optimism. These findings, although not directly related to the specific hypotheses of this study, do provide support for the general hypotheses of these constructs acting as buffers. Given such findings, it seems reasonable to hypothesize that these constructs might serve similar buffering roles with other stressor and outcome variables, which supports the hypotheses of the present study.
A study by Suldo and Huebner (2004) illustrates how the construct of life satisfaction, or well being, can act as a buffering variable. This longitudinal study examined the hypothesis that adolescents' perceptions of life satisfaction would moderate the influence of stressful life events on the subsequent development of psychopathological behavior. 816 middle and high school students completed the study. Results supported the moderating effect of satisfaction with life for externalizing behavior outcomes, but not for internalizing behavior problems. In other words, adolescents with higher levels of life satisfaction were less likely to develop later externalizing behaviors in the face of stressful life events. Life satisfaction reports independently predict subsequent externalizing behavior even while controlling for prior levels of externalizing behavior. These findings tentatively support the hypothesis that life satisfaction operates as a protective psychological strength that provides a buffer against some effects of adverse life events.

The work of Younkin and Betz (1996) serves as a fitting model for the construct of psychological hardiness. These authors designed the Psychological Hardiness scale as a response to the poor conceptualization and operationalization of the construct of hardiness evidenced in other extant hardiness measures. This scale was based around a unidimensional conceptualization of hardiness as a capacity for enduring hardship, or as resilience, the ability to recover rapidly from adversity. In the course of developing this scale, these authors examined the relationship between the Psychological Hardiness scale and other characteristics related to a healthy personality, which they identified as self-esteem, autonomy, depression, and general psychological symptomatology. It is notable that this operationalization of psychological health is very consistent with the
operationalization used in the present study. Strong correlations were found with these measures.

More particularly, it was hypothesized that psychological hardiness would serve as a moderator, or buffer, of the relationship between stress and well-being. Participants above the median in stress were divided via a median split into high and low groups for psychological hardiness. These two groups were examined for differences on the psychological health variables (depression, self-esteem, symptom reports, autonomy). T-tests revealed significant differences on all the psychological health variables. Thus, this evidence suggests that hardiness may buffer the relationship between stressors and psychological outcomes.

One model study suggests the potential buffering role of both optimism and proactive coping. Carver et al. (1993) examined how coping mediates the effect of optimism on distress in women with breast cancer. In this study, 59 breast cancer patients reported their overall level of optimism about life one day pre-surgery, ten days post-surgery, and at 3 month, 6 month, and 12 month follow-ups. Optimism was related to decreased distress at all points, above and beyond the effect of medical variables and beyond the effects of earlier distress, suggesting a moderating role. Path analysis also suggested that coping behaviors played a mediating role on optimism. Acceptance, positive reframing, and use of religion were the most commonly used coping mechanisms. Overall, this study suggests that differences in optimism can play an important role in buffering the effects of stress, and that coping strategies are a mediating mechanism through which optimism expresses its influence.
Summary

Taken as a whole, these various studies suggest common themes. First, body image issues are real issues for men. Second, body images issues are qualitatively different for men and women. Third, socio-cultural pressures may be increasing the salience of body image consciousness for men. Fourth, musculature is an aspect of body image important to men. Fifth, psychological health is a construct that can be conceptualized and measured in a myriad of ways. And lastly, the hypotheses that the indices of positive psychological adjustment will act as buffering variables in this study are supported by extant theoretical and empirical findings. Thus, this study seeks to examine body image and its practical implications for psychological outcome variables, one way of approaching the construct of psychological health.
Participants

Participants were recruited from two main sources. Firstly, 370 male undergraduate students enrolled in an introductory psychology class at The Ohio State University were recruited as participants in this study. Participation partially fulfilled a course requirement, but was voluntary in the sense that alternate options were available instead of research participation. Recruitment consisted of posting the experiment on the Research Experience Program (REP) website, where students had the option of selecting from a variety of experiments.

Demographics indicated that 84.5% of the participants identified themselves as Caucasian, 5.2% as African-American, 6.3% as Asian American, 2.4% as Hispanic American, and 1.6% as other. Participants were primarily in the 18-22 age range (93.9%). A detailed listing of the age of participants can be found in Table 3.1. The mean age of participants was 19.11 years old ($SD=1.90$ years). These demographics are fairly representative of the OSU undergraduate male population.

Secondly, approximately 375 male participants were sought to be recruited from a variety of Internet based websites. The main goal in seeking these participants was to
help insure that there were a wide range of body image concerns reflected in the samples used in this study. Particularly, the aim of recruiting participants from web-based sources was to increase the number of participants with marked dissatisfaction and preoccupation with their body, individuals who might not be adequately represented by the average introductory psychology students. Thus, participants were sought from websites likely to contain young adult men for whom body image is a salient issue. Permission was be sought via a standard email to include the url for this study on the messageboards of these websites as a means of advertisement entailing minimal expenditure on the organizations part (see Appendix B for a copy of this message). Notice of the study was only posted after explicit permission was received. With permission obtained, a standard description of the study was then sent for posting (see Appendix C). Examples of messageboards on websites focused on bodybuilding, weightlifting, and fitness that were contacted included: www.bodybuilding.com, www.getbig.com, and www.cyberiron.com.

The goal for online recruitment in this study was not achieved. Online recruitment was initiated towards the beginning of 2005, after the introductory psychology sample had been completed. A total of 25 permission emails were sent regarding online recruitment, primarily to the moderators of bodybuilding related messageboards. The majority of responses back were either not granting permission (nine total), or no response back at all (ten total). Of the nine email responses back not granting permission, six indicated that the website had a policy of no advertising, while the remaining three replies gave no reason. Alternatively, six replies indicated that permission was granted, so the advertisement was ultimately posted on six messageboards. These advertisements led to 19 participants completing the study. Given the apparent low efficiency of this
recruitment method, and given a lack of other prospects in terms of online recruitment, it was decided that the web recruited sample would be discarded from the design of this study. Since the obtained introductory psychology sample was sufficient in size to complete the main substantive analyses of this study, it was judged that the lack of the online recruited sample would not adversely affect the methodology and usefulness of this study. Issues that may have impacted the online recruitment will be further discussed in the discussion section.

The intended sample sizes of roughly 375 participants per recruitment source in this study were chosen as a conservative number of participants. These samples are based on standard guidelines for insuring adequate power (Cohen, 1992). For the correlational analyses in this study, for example, a sample size of 85 would be required to detect a moderate effect size of $r = .3$, with power of .80 and with statistical significance set at .05. The sample sizes in this study are thus more than adequate in regards to this criterion. In regards to the hierarchical regression analyses, it has been noted that moderator effects are difficult detect, and require large sample sizes in the range of 300 participants (McClelland & Judd, 1993). Thus, according to this criterion, the sample of 370 participants obtained in this study should be adequate for this statistical analysis.

**Instruments**

There were ten measures administered: the General Health Questionnaire-28 (Goldberg & Hillier, 1979), the Center for Epidemiological Studies-Depression Scale (Radloff, 1977), the Rosenberg Self-Esteem scale (Rosenberg, 1965), the Satisfaction with Life Scale (Diener, Emmons, Larsen & Griffin, 1985), the Psychological Hardiness Scale (Betz & Campbell, 2004), the Proactive Coping Scale (Greenglass, 1998), the Life
Orientation Test-Revised (Scheier, Carver, & Bridges, 1994), the Male Body Dissatisfaction Scale (Tylka, Bergeron, & Schwartz, 2005), the Drive for Muscularity Scale (McCreary & Sasse, 2000), and the Drive for Muscularity Attitudes Questionnaire (Morrison, Morrison, & Hopkins, 2003).

The General Health Questionnaire-28. The General Health Questionnaire-28 (GHQ-28; Goldberg & Hillier, 1979; see Appendix D) was developed to measure psychological health in large non-psychotic populations. The 28-item GHQ-28 is a shortened version of the original 60-item GHQ derived from factor analyses. The GHQ-28 is scored on a Likert scale of 0-3, producing a maximum total score of 84. Lower scores indicate higher well-being and functioning, while higher scores indicate psychological distress. Goldberg and colleagues (1997) reported that test-retest reliabilities range from .61 to .90, and Cronbach’s alpha range from .71 to .88. Cronbach’s alpha in the present study was .93. The convergent validity of this scale has been supported by correlations with several other extant measures of psychological distress (Cano, Sprafkin, Saturo, Lantinga, Fiese, & Brand, 2001). The construct validity of this scale has been supported by the ability of this scale to detect psychopathology as independently diagnosed by structured interviews designed to generate diagnoses according to the ICD-10 and DSM-IV (Goldberg et al., 1997). This questionnaire also contains four subscales, measuring somatic complaints, anxiety and insomnia, social dysfunction, and severe depression, respectively. For the purposes of this study, the overall score measuring psychological distress was used as a measure of symptomatology.

The Center for Epidemiological Studies-Depression Scale. The Center for Epidemiological Studies-Depression Scale (CES-D, Radloff, 1977; see Appendix E) is a
20-item self-rating scale designed for measuring symptoms of depression. It was
designed for use in the general population as a measure of level of depressive symptoms,
rather than as a tool for screening for clinical depression. The 20 items of the CES-D ask
participants to rate how much particular statements have applied to them over the past
week. Responses to these items are scored on a 4-point scale, ranging from never or
rarely to little or somewhat to occasionally to most. Responses to these items are
averaged for a total score reflecting overall depression, with higher scores reflecting
higher levels of depression. Radloff (1977) reported Cronbach’s alpha coefficients
ranging from .85 to .90, and a test-retest reliability coefficient of .67 (4 weeks).
Cronbach’s alpha in the present study was .91. The convergent validity of this scale has
been supported by moderate correlations with other measures of depression, such as the
Beck Depression Inventory (Skorikov & Vandervoort, 2003), and the construct validity
has been supported by correlations with self-esteem, anxiety, hostility, hypochondriasis,
and locus of control (Radloff, 1977).

The Rosenberg Self-Esteem Inventory. The Rosenberg Self-Esteem Inventory (RSE,
Rosenberg, 1965; see Appendix F) includes ten items, with five reverse scored. It is
scored on a one to four scale. Lower scales reflect higher self-esteem, while higher scores
reflect lower self-esteem. Fleming and Courtney (1984) reported a Cronbach’s alpha of
.88 and a one-week test-retest reliability correlation of $r = .82$. Cronbach’s alpha in the
present study was .88. The convergent validity of this scale has been supported by
positive correlations with other self-esteem measures, including interviewer ratings of
self-esteem, and the construct validity of this scale has been supported by correlations
with depression and anxiety (Rosenberg, 1965).
**The Satisfaction With Life Scale.** The Satisfaction With Life Scale (SWLS, Diener, Emmons, Larsen & Griffin, 1985; see Appendix G) is a measure of life satisfaction, one factor in the more general construct of subjective well-being. This measure focuses on well-being as a cognitive-judgmental process. The SWLS consists of 5-items rated on a 7-point Likert scale. Diener and other authors (1985) reported a two-month test-retest reliability correlation of $r = .82$, and Cronbach’s alpha was .87. Cronbach’s alpha in the present study was .89. The convergent validity of this scale has been supported by positive correlations with multiple measures of well-being utilizing a variety of methods (e.g. interviews, informant ratings), the construct validity has been supported by negative correlations with depression, anxiety, and general symptom reports, and the discriminant validity has been suggested by insignificant correlations with impulsivity and affect intensity (Pavot & Diener, 1993).

**The Psychological Hardiness Scale.** The Psychological Hardiness Scale (PHS, Younkin & Betz, 1996; see Appendix H) is a 20-item scale designed to measure attitudes reflecting psychological hardiness. Items are scored on a five-point Likert scale, and the average of the items is taken. Higher scores reflect higher levels of psychological hardiness. Cronbach’s alpha of .92 was reported (Younkin & Betz, 1996). Cronbach’s alpha in the present study was .92. Furthermore, the convergent validity of this scale has been supported by a correlation of $r=.75$ with the Cognitive Hardiness scale, and the construct validity has been supported by correlations with self esteem ($r=.56$) and depression ($r=-.59$) (Younkin & Betz, 1996).

**The Proactive Coping Scale.** The Proactive Coping Scale (PCS, Greenglass, 1998; see Appendix I) is a 14-item scale designed to measure attitudes reflecting proactive
coping. Items are scored on a 1 to 4 scale, with 1 assigned to “not at all true, 2 to “barely true”, 3 to “somewhat true” and 4 to “completely true. Higher scores reflect higher levels of proactive coping attitudes. Greenglass reported Cronbach’s alpha of .85. Cronbach’s alpha in the present study was .87. The convergent validity of this scale has been supported by positive correlations with the Proactive Attitude Scale, and the criterion-related validity of this scale has been supported by positive correlations with general perceived self-efficacy and negative correlations with depression, self-blame, and denial (Greenglass, 1998).

*The Life Orientation Test-Revised*. The Life Orientation Test-Revised (LOT-R, Scheier, Carver, & Bridges, 1994; see Appendix J) is a six-item scale designed to measure attitudes reflecting dispositional optimism. Items are scored on a 5 point Likert scale. Scheier et al. (1994) reported Cronbach’s alpha of .78, and a 4 month and 28 month test-retest reliability correlation of \( r = .68 \) and \( r = .79 \), respectively. Cronbach’s alpha in the present study was .81. The construct validity of this scale has also been supported by correlations with self-esteem \( (r = .54) \) and neuroticism \( (r = -.50) \), and the criterion-related validity has been supported by correlations with depression \( (r = -.42) \), symptom reports \( (r = -.21) \), planning \( (r = .30) \), use of religion \( (r = .22) \), use of positive reinterpretation \( (r = .47) \), denial \( (r = -.17) \), and active coping \( (r = .30) \) (Scheier et al., 1994).

*Male Body Dissatisfaction Scale*. The Male Body Dissatisfaction Scale (MBAS, Tylka, Bergeron, & Schwartz, in press; see Appendix K) is a general measure of body dissatisfaction in men. Items were designed to capture the components of the theoretical framework of men’s body image developed from the findings of Ridgeway and Tylka (2003). Using a qualitative design, these researchers uncovered that men generally
emphasized muscularity, typically emphasized leanness, and variably emphasized height as important overall body characteristics. In terms of body areas, men typically desired definition and leanness in the abdominal region and large, strong, and defined arms; they variably discussed wanting large shoulders, large and defined calves, and large, strong, and defined chests, upper legs, and backs. Therefore, items were developed to reflect these characteristics. Items include “I think I have too little muscle on my body,” “I think my chest should be larger and more defined,” and “Have you felt ashamed of your body size or shape.” Items are rated on a scale ranging from 1 (never) to 6 (always); higher scores indicate higher body dissatisfaction.

In this study, the original version of the MBAS was used, containing 29 items. Thus, five extra items were included. Subsequent factor analyses (Tylka et al., in press) have indicated that these five items do not load on any of the three factors comprising the MBAS subscales. Therefore, these five items were not used in computing the MBAS overall scores, and were thus left out of any analyses.

The MBAS is comprised of three subscales, confirmed by factor analyses: a muscularity subscale, comprised of 10 items reflecting concerns about muscularity; the low bodyfat subscale, comprised of eight items reflecting concerns about bodyfat; and the two-item height scale, reflecting concerns about height. Alphas were reported as .91 for the total 24-item MBAS scale, .93 for the 8-items low body fat subscale, .90 for the 10-item muscularity subscale, and .88 for the 2-item height subscale (Tylka et al., in press). The total scale \( (r = .91) \), the muscularity subscale \( (r = .88) \), the low body fat subscale \( (r = .94) \), and the height subscale \( (r = .81) \) also demonstrated adequate test-retest reliability over a 2-week period. Cronbach’s alphas in the present study were .92 for the overall
scale, .94 for the low body fat subscale, .90 for the muscularity subscale, and .85 for the height subscale. The convergent validity of this scale has also been supported by positive correlations with extant male body image measures, the discriminant validity has been supported via the non-significant relationship of the MBAS total scale and subscales to impression management, and the concurrent validity has been supported by correlations with self-esteem and eating disorder symptomatology (Tylka et. al., in press).

*The Drive for Muscularity Scale.* The Drive for Muscularity Scale (DMS, McCreary & Sasse, 2000; see Appendix L) is a 15-item questionnaire designed to measure attitudes and behaviors reflecting an individual’s preoccupation with increasing their muscularity. Items are scored on a 6-point scale from never to always. Items are averaged, with a higher score indicating higher drive for muscularity. McCreary and Sasse reported Cronbach’s alpha of .83. Cronbach’s alpha in the present study was .89. The convergent validity of this scale has been supported by positive correlations with low self-esteem and depression, and the discriminant validity of this scale has been supported by an insignificant correlation with drive for thinness (McCreary & Sasse, 2000).

*The Drive for Muscularity Attitudes Questionnaire.* The Drive for Muscularity Attitudes Questionnaire (DMAQ, Morrison, Morrison, & Hopkins, 2004; see Appendix M) is an eight-item scale that measures the desire to attain a more muscular body. It utilizes a five-point Likert scale, ranging from strongly disagree to strongly agree. Items are averaged, with higher scores indicating a stronger drive for muscularity. Morrison et al. reported Cronbach’s alpha of .84. Cronbach’s alpha in the present study was .84. The construct validity of this scale has also been supported by negative correlations with
appearance self esteem, and positive correlations with vanity, weight training, protein/supplement usage, and contemplation of steroid use (Morrison et al., 2004).

Procedure

Procedures were uniform for all participants. Participants signed up for the study through the Research Experience Program website, where details of the study were described in a standard study description (see Appendix N), and the location and time of data collection sessions were listed. Data collection sessions were located in one computer lab on campus, so that the procedures were generally the same for all of these participants. At the beginning of each data collection session a brief script was recited to participants describing to them how to proceed with the study (see Appendix O). Anonymity was insured by requiring no identifying information from the participants. After giving participants the opportunity to ask questions, participants were asked to read the page on the computer screen in front of them. This page was the Participant Information Page (see Appendix P), which described the nature of the study in depth, and instructed participants on how to continue to the informed consent page (see Appendix Q) if they still wished to complete the study. Once agreeing to the informed consent information, the measures were presented for the participants to complete, including a demographics questionnaire that asked for information regarding race, age, sexual orientation, year in school, weight, height, and sports participation (see Appendix R). All measures were completed on a computer in the computer lab. After completing the measures, a debriefing statement was made available for participants to read and print out if they wished (see Appendix S).
The measures utilized in this study were presented in several different orders to test for order effects. Four instrument orders were created. These four instrument orders were varied across data collection sections. The website containing all the measures in the study, along with informed consent and debriefing information, was created through the Surveymonkey service, www.surveymonkey.com (see Appendix T for the security statement available on the surveymonkey website).

An initial portion of the study was a brief pilot version early in the Fall of 2004 used to investigate the web-based design of the study. Twenty male undergraduate students recruited through the REP program participated in this section. The goal with this initial pilot session was to insure that there were no problems with the web based methodology before proceeding with further data collection. Given that no problems were identified during this pilot session, the study proceeded without changes, and these participants were utilized in all analyses.

Data Analysis

In regards to the first hypothesis, reliability analyses were performed on the items of the MBAS, as well as on the other scales utilized in this study. Furthermore, correlational analysis was used to examine the relationships between the MBAS and its subscales and the DMS, DMAQ, participant weight, and participant height. To examine the second hypothesis, correlational analysis was used to investigate the relationship between MBAS scores and the relevant psychological variables. Hierarchical moderated regression was utilized to examine the hypothesis that the positive psychological variables will moderate the relationship between body dissatisfaction and the indices of psychological distress. In regards to the demographic variables, MANOVA was used to assess the impact of these
variables on the relationship between the MBAS scores and the psychological outcome variables. Furthermore, ANOVA was utilized to test for order effects.
<table>
<thead>
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<th>Percentage of Total Participants</th>
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</tr>
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</tr>
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<tr>
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<td>2</td>
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Table 3.1: Listing of Number and Percentage of Participants by Age (N=368)
CHAPTER 4

RESULTS

*Missing Data: Preliminary Analysis and Discussion*

Before beginning any of the substantive analyses of this study, the issue of missing data was considered. It became evident upon reviewing all the data after the completion of data collection that there were missing responses. Given that all of the scales used in this study yield overall scores from the sum of individual items, missing values could lead to biased results, necessitating the consideration of this issue.

Traditional approaches to handling missing data typically involve removal methods such as listwise deletion, where only participants with complete data are included in analyses, or simple substitution methods such as mean substitution, where the mean of the item is substituted for missing values (Sinha ray, Stern, & Russell, 2001). These methods are attractive for their simplicity. However, many authors have noted the potential methodological flaws of such procedures (e.g. Little & Rubin, 1987; Downey & King, 1998; Sinharay, Stern, & Russell, 2001). For example, mean substitution decreases the variance of measures and leads to biased standard errors and parameter estimates, making it an undesirable method. Listwise deletion poses a threat of producing biased results if data is not missing at random. If missing at random, then listwise deletion
restricts the range of the data, decreasing power and increasing the chance of committing a type II error. Although this method is not always contraindicated, its limitations are important to consider.

Given that a total of 148 participants in this study had some missing data, listwise deletion would sharply reduce the sample size, and subsequently the power, of this study. Another common deletion method, pairwise deletion, would allow for participants to be used in any particular analysis if they have complete data on the particular scales being examined, which would allow for more data to be utilized. However, this method has its critiques, particularly that different estimates are derived from different individuals, and can produce biased standard errors and parameter estimates (Sinha, John, & Russell, 2001). Thus, for the sake of this study, more methodologically sound procedures were researched in order to avoid biasing the results of this study and to utilize the maximum amount of obtained data possible. Multiple imputation and maximum likelihood analysis, which have been recommended by many authors due to their ability to produce unbiased estimates of parameters and standard errors for ignorable missing data (e.g. Collins, Shafer, & Kam, 2001; Little & Rubin, 1987; West, 2001), are two methods that were researched at length, and were determined to be viable options for estimating missing data, contingent upon further examination of the data.

Based on the recommendation of Collins, Shafer, & Kam (2001), the first step taken in handling the missing data was considering the issue of whether the data was missing at random (MAR) or not missing at random (NMAR). If data is MAR, then procedures to estimate missing data can likely be used, whereas data that is NMAR may violate assumptions made by such procedures. Given the presence of lurking variables when data
is NMAR, including auxiliary variables that correlate with the missing data may be necessary in reducing bias for analyses to estimate missing data in such cases. In this particular study, given that it is possible participants may have consistently chosen not to answer particular items, or that the web methodology may have caused consistent patterns in the missing data (participants may have tended to overlook items towards the middle of the webpage, for example), investigating the pattern of the missing data appeared warranted before proceeding further.

Overall, there are no definitive methods for discriminating between MAR and NMAR data (Collins, Shafer, & Kam, 2001). One suggested approach with partial effectiveness for examining the data to assess whether it is MAR or NMAR is to observe the frequencies of missing values for individual items, for individual scales, and for individual participants (Bingham, Stemmler, Petersen, & Graber, 1998). The presence of outliers could suggest a nonrandom pattern in the missing data. Before such analysis was initiated, the data was examined manually for extreme cases, such as participants with complete measures missing, where estimation would be unfeasible. Two participants were first removed, since they had completed well under half of the measures in the study, making their data useless. The data of the remaining 368 participants was then examined as suggested. Figure 4.1 presents data on the missing values across the four instrument orders. Instrument order 1 (n=105) had a total of 65 missing item responses (.39% of total items); Instrument order 2 (n=84) had a total of 50 missing item responses (.38% of total items); instrument order 3 (n=94) had a total of 60 missing item responses (.41% of total items); and instrument order 4 (n=85) had a total of 62 missing item responses (.47% of total items). These samples appear to be evenly balanced in the total
number and percentage of missing item values. The overall percentage of missing data is .41% of all the possible item responses (237 missing values out of a total of 57776 possible values). Thus, along with appearing distributed evenly across all four instrument orders, the missing data makes up a very small proportion of the overall data.

As a further test, a One-way ANOVA was run to examine whether there were significant differences between the mean of missing items across the four instrument orders. A variable was created that indicated the number of missing items per participant, which was used as the dependent variable, and the instrument order was used as the independent variable. The obtained F value was not significant: \( F(3, 365) = .68, p > .05 \). This suggests that there are no significant differences between the mean of missing items among the four instrument orders.

Figure 4.2, 4.3, and 4.4 present the pattern of missing data for individual items, individual participants, and measures, respectively. In regards to individual items, as Figure 4.2 illustrates, the majority of items had between 0 to 3 missing values across all participants. A small minority had between 4 or 5 missing items values. Thus, overall, there do not appear to be any outliers in terms of individual items, as the number of missing values is consistent. This suggests that there were no items that participants on the whole tended to purposefully not respond to. Furthermore, missing values are a rather small minority of the total possible responses for all items.

In regards to individual participants, as Figure 4.2 illustrates, the majority of participants had between 0 to 2 missing values across all items. A small minority had between 3 to 5 missing items values. Overall, there do not appear to be any outliers in terms of individual participants, as the number of missing values is consistent. This
suggests that there were no participants who had a notable tendency to not respond to items. Furthermore, missing values are again a rather small minority of the total possible responses for all participants.

In regards to individual measures, it may be helpful to further describe the pattern of missing data, since Figure 4.4, although indicating the total number of missing items, does not reflect that there are differing numbers of total items across the measures. Thus, in terms of percentages of total items: the MBAS had .42% of the total data missing; the DMS and DMAQ had .36% of the total data missing; the GHQ-28 and CES-D had .43% of the total data missing; the RSE had .38% of the total data missing; the SWLS had .22% of the total data missing; the PHS had .50% of the total data missing; the PCS had .35% of the total data missing; and the LOT-R had .43% of the total data missing.

Overall, there do not appear to be any significant outliers in terms of individual measures, as the percentages of missing values are consistent. There appears to be a slight trend for the briefer measures to have less missing data than longer measures. Longer scales, which require scrolling down the webpage, may increase the odds that a participant would overlook an item. However, given that the percentages are generally similar across measures, and that the total number of items missing does not deviate extremely between measures (i.e. the missing data is a small percentage of the total data for all measures), this does not appear to be problematic in this study.

Overall, the missing data appears to be evenly distributed across items, measures, and participants. Thus, there appear to be no patterns that suggest the data is not MAR overall. It is likely that the missing data is due to participant oversight, or to infrequent instances of participants choosing not to answer a particular question. If any participants
did choose not to answer particular questions, however, there does not appear to be a problematic pattern to this nonresponse (such as a trend of avoiding particular items). It is also likely that the web based design of the study contributed to the missing data, given that the process of scrolling through items makes it easy to overlook whether a question was filled in or not, especially if completing the items quickly. The possibility that there is an unknown variable contributing to the presence of the missing data can not conclusively be ruled out. However, given the very small percentage of the overall data the missing data reflects, it is unlikely that the presence of the missing data would have a significant effect on the results of any analyses in this study, given that the rate of missing data has a strong effect on the degree of bias (Enders, 2001), with less missing data tending to entail less bias. Thus, given that the data appears to be MAR, the most likely threat is a small reduction in the statistical power of the study (Little & Rubin, 1987). Thus, estimation procedures are desirable, in that such procedures would allow for maximizing the amount of useable data, maintaining statistical power.

Given that the missing data appears to be MAR, the next step was to use a method to estimate the missing data. For the purpose of this study, given the small percentage of missing data, maximum likelihood analysis was chosen. Given that maximum likelihood analysis and multiple imputation are similar in their robustness, this decision was primarily based on the availability of software and the author’s lack of experience with the writing of code necessary for performing multiple imputation, a decision with some support in the literature. For example, Sinharay, Stern, and Russell (2001) have recommended that maximum likelihood analysis be used instead of multiple imputation when feasible due to its increased efficiency, although noting that multiple imputation is
more flexible if the data are NMAR or nonlinear in nature. Thus, the maximum likelihood analysis function in Systat 11.0 was utilized for imputing the missing data in this study. The observed values of items that made a given scale were used to estimate the missing values within that scale. Thus, separate analyses were performed for each scale in this study. This analysis produced estimated values for all of the missing data in the study. Once all missing data was estimated, the completed data set was used to proceed with the main analyses of this study.

Descriptive Statistics and Preliminary Analyses

After addressing the issue of missing data, the next step in analysis was to check the quality of the data collected through examining descriptive statistics and the psychometric properties of the scales used. Analysis began with the calculation of descriptive statistics. The mean, standard deviations, and Cronbach’s alpha for the thirteen scales used in this study can be found in Table 4.1. Findings support the internal consistency reliability for the scales utilized in this study, given that Cronbach’s alpha for all scales is greater than .70.

Since four different orders of the measures were used in this study, a multivariate analysis of variance was used to check for order effects. This omnibus test was utilized instead of multiple one-way ANOVA’s, since multiple ANOVA’s increase type I error, and also overlook the effect of correlations amongst the dependent variables (Cohen & Cohen, 1983). Effects on the ten measures used in the study were examined. The results of the MANOVA revealed no statistically significant differences according to Wilke’s
Lambda (.89), F(10,358)=1.46, ns, suggesting no mean differences in the scales due to order effects. Therefore, order was not included as a variable in any subsequent analyses.

As another preliminary analysis, stepwise regression was used to examine the influence of the demographic variables (age, body mass index (BMI), height, race/ethnicity, sexual orientation, sports participation, fitness activity participation, weightlifting participation) on the criterion variables (GHQ, CES-D, and RSE scores). Body mass index, computed from height and weight, was utilized instead of weight in this analysis, since weight is confounded with height. If any demographic variable contributed unique variance to any of the criterion variables, then its variance would be partialled out in the tests of moderation. Results of the stepwise regression on the demographic variables can be found in Table 4.2. None of the demographic variables were found to contribute any statistically significant variance to the criterion variables. Thus, other than specific hypotheses regarding these variables, the demographic variables were not examined in any further analyses in this study.

**Main Hypothesis: Correlational Analyses**

Correlational analysis was used to investigate the hypothesis that body image will be correlated with indices of psychological health. The MBAS (including its three subscales), DMS, DMAQ, GHQ-28, CES-D, RSE, SWLS, PHS, PCS, and LOT-R were utilized in this analysis. The results of this analysis can be found in Table 4.3.

Significant positive correlations were found between the MBAS scores and the GHQ-28 (r = .25, p < .01), CES-D (r = .30, p < .01), and RSE (r = .39, p < .01). Significant negative correlations were found between the MBAS scores and the SWLS (r = -.26, p
<.01), PHS ($r = -.32, p < .01$), PCS ($r = -.24, p < .01$), and LOT-R ($r = -.21, p < .01$).

These correlations are small to medium in magnitude, given Cohen’s (1988) recommendation that correlations between .1 to .3 are small in magnitude and correlations from .3 to .5 are medium in magnitude.

In terms of the three MBAS subscales, significant positive correlations were observed between all three subscales (muscularity, low body fat, height) and the GHQ-28, CES-D, and RSE. Significant negative correlations were observed between the muscularity and body fat subscale and the SWLS, PHS, PCS, and LOT-R. For the height subscale, a significant negative correlation was found only with the PHS. All significant correlations were small in magnitude.

**Main Hypothesis: Regression Analyses**

Hierarchical moderated regression (HMR) was utilized to examine whether satisfaction with life, psychological hardiness, proactive coping, and optimism moderated the relationship between body image dissatisfaction and the three criterion variables (depression, symptom reports, self esteem). This analysis has been recommended because of its ability detect the presence or absence of moderating effects (Aiken & West, 1991). Moderators may or may not be related to the predictor or the criterion, and the predictor may or may not be related to the criterion (Frazier, Tix, & Barron, 2004).

Following the HMR procedure discussed by Aiken and West (1991), the predictor (body dissatisfaction) and proposed moderator variables (satisfaction with life, psychological hardiness, proactive coping, optimism) were entered at Step 1 of each analysis. Next, at Step 2, the interaction terms (body dissatisfaction x satisfaction with
life, body dissatisfaction x psychological hardiness, body dissatisfaction x proactive
coping, body dissatisfaction x optimism) were entered. Evidence for a moderator effect is
indicated at Step 2 by a statistically significant increment in R² (i.e., ΔR²) and beta
weight. Because statistically significant interactions are difficult to detect in
nonexperimental designs, the use of liberal alphas (e.g., .10 or .25) has been
recommended (McClelland & Judd, 1993). Nevertheless, because of the high number of
hierarchical moderated regressions performed in the present study (i.e., 12), alpha was set
at .020, rounding from the division of .25 and 12, the number of analyses in this study.
Also, because statistical significance is just one measure of a variable’s contribution to
the criterion (McClelland & Judd, 1993), effect size was considered in addition to
significance. Following Cohen’s (1992) recommendations, ΔR² values at or above .02
were considered to make unique and meaningful contributions to the criterion.

Results of the regression analyses examining the moderating role of the moderating
variables on the criterion variables of symptom reports, depression, and self esteem can
be found in Tables 4.4, 4.5, and 4.6, respectively. Overall, results of the regression
analyses indicated small, statistically significant moderating effects for psychological
hardiness (β = -.1, t [365] = -2.46, p < .020, ΔR² = .011) and optimism (β = -.11, t [365] =
-2.39, p < .020, ΔR² = .011) on the relationship between body image and symptom
reports, and for optimism (β = -.11, t [365] = -2.89, p < .020, ΔR² = .012) on the
relationship between body image and self-esteem. The remaining nine moderating effects
were not statistically significant. According to effect size recommendations for practical
significance, none of the nine moderating relationships examined contributed a
practically significant incremental contribution to the variance explained in the criterion variables.

Validation of the MBAS

Several analyses were also performed in order to further examine the reliability and validity of the MBAS and its subscales. As previously reported, reliability analyses were performed on all scales used in this study, displayed in Table 4.3. More particularly, Cronbach’s alpha for the MBAS overall scale was found to be .92. Cronbach’s alpha for the muscularity, low body fat, and height subscales were found to be .90, .94, and .85, respectively. These results are consistent with previous findings (Tylka et al., 2005). Item total correlations on the overall scale were high for most items, with an average of item total correlation of .54 and a range of .20 to .76. Only two items had item-total correlations below .30: items 12 and 19, the two items comprising the height scale. Since these two items make up an independent subscale, and since previous results found that these items demonstrated acceptable item-total correlations (Tylka et al., 2005), these items were retained in the overall score for this study. The respective average item total correlations (.60, .78, and .75) and ranges (.34 to .78, .60 to .90, and .75) for the muscularity, low body fat, and height subscales were also consistent with previous findings (Tylka et al., 2005), and suggest that the subscales are reliable.

Several hypotheses focused on gathering convergent and concurrent validity evidence for the MBAS and its subscales through correlational analyses. Correlations with the DMS and DMAQ, two extant measures of muscularity, were examined as tests of convergent validity. Furthermore, correlational analyses with several demographic
variables were used to test the concurrent validity of the MBAS subscales. Correlations reported in Table 4.3 indicate significant positive correlations between the MBAS and the DMS and DMAQ. Also, as predicted, the muscularity subscale of the MBAS had the strongest correlation with the DMS ($r = .69$) and DMAQ ($r = .68$), demonstrating large correlations (Cohen, 1988). Alternatively, the low body fat and height subscales displayed notably weaker correlations with the DMS and DMAQ: for the low body fat scales, correlations were .08 and .10 (DMS and DMAQ, respectively); and for the height subscale, correlations were .21 and .07 (DMS and DMAQ, respectively). Other than the correlation between height subscale and the DMS, which is a small correlation, the other three correlations are practically insignificant (Cohen, 1988).

Table 4.7 reports the correlations between the MBAS, its subscales, and the height, weight, and body mass index of participants. Particularly, as predicted positive correlations were observed between the low body fat subscale and the weight ($r = .52$) and body mass index of participants ($r = .56$), and between the height subscale and the height of participants ($r = .54$). These predicted correlations are all practically significant and large in size (Cohen, 1988).
Figure 4.1: Missing data across instrument orders

Note: order 1 (n=105), order 2 (n=84), order 3 (n=94), order 4 (n=85)
Figure 4.2: Missing data across individual items
Figure 4.3: Missing data across individual participants (N=368)
Figure 4.4: Missing data across measures
<table>
<thead>
<tr>
<th>Measure</th>
<th>Scale</th>
<th>M</th>
<th>SD</th>
<th>Alpha</th>
<th>Range</th>
</tr>
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<td>MBAS</td>
<td>Overall</td>
<td>2.99</td>
<td>.83</td>
<td>.92</td>
<td>1-5</td>
</tr>
<tr>
<td></td>
<td>Muscularity</td>
<td>3.26</td>
<td>.99</td>
<td>.90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low Bodyfat</td>
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<td>1.24</td>
<td>.94</td>
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</tr>
<tr>
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<td>Height</td>
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<td>.85</td>
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<td>1.69</td>
<td>.40</td>
<td>.93</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CESD</td>
<td>1.69</td>
<td>.49</td>
<td>.91</td>
<td></td>
</tr>
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<td></td>
<td>RSE</td>
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<td>.49</td>
<td>.88</td>
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<td>SWLS</td>
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<td>1.27</td>
<td>.89</td>
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<tr>
<td></td>
<td>PHS</td>
<td>3.67</td>
<td>.58</td>
<td>.92</td>
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</tr>
<tr>
<td></td>
<td>PCS</td>
<td>3.14</td>
<td>.41</td>
<td>.87</td>
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</tr>
<tr>
<td></td>
<td>LOTR</td>
<td>3.56</td>
<td>.69</td>
<td>.81</td>
<td></td>
</tr>
</tbody>
</table>

Note: N=368

Table 4.1: Means, Standard Deviations, and Cronbach's Alpha for the MBAS, DMS, DMAQ, GHQ, CESD, RSE, SWLS, PHS, PCS, and LOTR Scales
Table 4.2: Stepwise Regression Analyses Predicting Self Esteem, Depression, and Symptom Reports from Race/Ethnicity, Sexual Orientation, Body Mass Index, Height, Age, Participation in Weighlifting, Participation in Sports, and Participation in Recreational Fitness Activities (N=368)
<table>
<thead>
<tr>
<th></th>
<th>MBAS</th>
<th>MBAS-MUS</th>
<th>MBAS-BDFT</th>
<th>MBAS-HGT</th>
<th>DMS</th>
<th>DMAQ</th>
<th>GHQ</th>
<th>CESD</th>
<th>RSE</th>
<th>SWLS</th>
<th>PHS</th>
<th>PCS</th>
<th>LOTR</th>
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<td>1</td>
<td>.77**</td>
<td>.26**</td>
<td>.12*</td>
<td>.21**</td>
<td>.71**</td>
<td>.71**</td>
<td>.78**</td>
<td>.64</td>
<td>-.53**</td>
<td>.50**</td>
<td>.68**</td>
<td>.59**</td>
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<td>.78**</td>
<td>.69**</td>
<td>.13*</td>
<td>.17**</td>
<td>.17**</td>
<td>.12*</td>
<td>.61**</td>
<td>-.49**</td>
<td>-.72**</td>
<td>.42**</td>
<td>.62**</td>
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<td></td>
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<td>.30**</td>
<td>.68**</td>
<td>.10*</td>
<td>.18**</td>
<td>.18**</td>
<td>.13*</td>
<td>(-.40)**</td>
<td>(-.64)**</td>
<td>(-.36)**</td>
<td>.44**</td>
<td></td>
<td></td>
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</tr>
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<td>4</td>
<td>.47**</td>
<td>.20**</td>
<td>.13*</td>
<td>.13*</td>
<td>.13*</td>
<td>-.08*</td>
<td>(-.58)**</td>
<td>(-.38)**</td>
<td>(-.62)**</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>5</td>
<td>.25**</td>
<td>.23**</td>
<td>.19**</td>
<td>(-.03)</td>
<td>(-.11)*</td>
<td>(-.08)*</td>
<td>(-.35)**</td>
<td>(-.52)**</td>
<td></td>
<td></td>
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<tr>
<td>6</td>
<td>.30**</td>
<td>.28**</td>
<td>(-.19)</td>
<td>(-.20)**</td>
<td>(-.15)**</td>
<td>(-.04)</td>
<td>(-.48)**</td>
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<td></td>
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</tr>
<tr>
<td>7</td>
<td>.39**</td>
<td>(-.20)**</td>
<td>(-.17)</td>
<td>(-.04)</td>
<td>.01</td>
<td>(-.10)*</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>(-.26)**</td>
<td>(-.26)**</td>
<td>(-.21)</td>
<td>(-.08)</td>
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<td>9</td>
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<td>(-.21)**</td>
<td>(-.16)</td>
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<td>(-.16)**</td>
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<td>11</td>
<td>(-.22)**</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note: With an N of 368, * indicates significance at the .05 level, and ** indicates significance at the .01 level.

Table 4.3: Overall Correlations Among the MBAS and its Subscales, DMS, DMAQ, GHQ, CES-D, RSE, SWLF, PHS, PCS, and LOT-R Scales (N=368)
<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor</th>
<th>β</th>
<th>Cumulative $R^2$</th>
<th>Adjusted $R^2$</th>
<th>Incremental $R^2$</th>
<th>$t(368)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MBASOV</td>
<td>.10</td>
<td>.354</td>
<td>.347</td>
<td>.354</td>
<td>2.07</td>
</tr>
<tr>
<td></td>
<td>PHS</td>
<td>-.55</td>
<td></td>
<td></td>
<td></td>
<td>(-11.98)*</td>
</tr>
<tr>
<td>2</td>
<td>MBASxPHS</td>
<td>-.10</td>
<td>.365</td>
<td>.356</td>
<td>.011</td>
<td>(-2.46)*</td>
</tr>
<tr>
<td>1</td>
<td>MBASOV</td>
<td>.22</td>
<td>.175</td>
<td>.166</td>
<td>.175</td>
<td>4.26*</td>
</tr>
<tr>
<td></td>
<td>PCS</td>
<td>-.29</td>
<td></td>
<td></td>
<td></td>
<td>(-5.82)*</td>
</tr>
<tr>
<td>2</td>
<td>MBASxPCS</td>
<td>-.09</td>
<td>.183</td>
<td>.172</td>
<td>.008</td>
<td>-1.89</td>
</tr>
<tr>
<td>1</td>
<td>MBASOV</td>
<td>.19</td>
<td>.270</td>
<td>.262</td>
<td>.270</td>
<td>4.03*</td>
</tr>
<tr>
<td></td>
<td>LOT-R</td>
<td>-.43</td>
<td></td>
<td></td>
<td></td>
<td>(-9.24)*</td>
</tr>
<tr>
<td>2</td>
<td>MBASxLOT-R</td>
<td>-.11</td>
<td>.281</td>
<td>.271</td>
<td>.011</td>
<td>(-2.39)*</td>
</tr>
<tr>
<td>1</td>
<td>MBASOV</td>
<td>.16</td>
<td>.185</td>
<td>.180</td>
<td>.185</td>
<td>3.18*</td>
</tr>
<tr>
<td></td>
<td>SWLS</td>
<td>-.36</td>
<td></td>
<td></td>
<td></td>
<td>7.43*</td>
</tr>
<tr>
<td>2</td>
<td>MBASxSWLS</td>
<td>-.04</td>
<td>.186</td>
<td>.181</td>
<td>.001</td>
<td>-.76</td>
</tr>
</tbody>
</table>

Table 4.4: Hierarchical Multiple Regression Analyses Predicting Symptom Reports from Body Image Dissatisfaction, The Four Indices of Positive Psychological Adjustment, and Their Respective Interactions (N=368)
<table>
<thead>
<tr>
<th>Step</th>
<th>Predictor</th>
<th>β</th>
<th>Cumulative $R^2$</th>
<th>Adjusted $R^2$</th>
<th>Incremental $R^2$</th>
<th>$t(368)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MBASOV</td>
<td>.11</td>
<td>.418</td>
<td>.412</td>
<td>.418</td>
<td>2.45*</td>
</tr>
<tr>
<td></td>
<td>PHS</td>
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<td></td>
<td></td>
<td></td>
<td>(-13.88)*</td>
</tr>
<tr>
<td>2</td>
<td>MBASxPHS</td>
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<td>.422</td>
<td>.414</td>
<td>.003</td>
<td>-1.45</td>
</tr>
<tr>
<td>1</td>
<td>MBASOV</td>
<td>.24</td>
<td>.202</td>
<td>.193</td>
<td>.202</td>
<td>4.80*</td>
</tr>
<tr>
<td></td>
<td>PCS</td>
<td>-.31</td>
<td></td>
<td></td>
<td></td>
<td>(-6.40)*</td>
</tr>
<tr>
<td>2</td>
<td>MBASxPCS</td>
<td>-.02</td>
<td>.203</td>
<td>.192</td>
<td>.000</td>
<td>-.44</td>
</tr>
<tr>
<td>1</td>
<td>MBASOV</td>
<td>.21</td>
<td>.316</td>
<td>.308</td>
<td>.316</td>
<td>4.62*</td>
</tr>
<tr>
<td></td>
<td>LOT-R</td>
<td>-.47</td>
<td></td>
<td></td>
<td></td>
<td>(-10.39)*</td>
</tr>
<tr>
<td>2</td>
<td>MBASxLOT-R</td>
<td>-.06</td>
<td>.320</td>
<td>.310</td>
<td>.004</td>
<td>-1.42</td>
</tr>
<tr>
<td>1</td>
<td>MBASOV</td>
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<td>.269</td>
<td>.265</td>
<td>.269</td>
<td>3.94*</td>
</tr>
<tr>
<td></td>
<td>SWLS</td>
<td>-.44</td>
<td></td>
<td></td>
<td></td>
<td>(-9.55)*</td>
</tr>
<tr>
<td>2</td>
<td>MBASxSWLS</td>
<td>-.01</td>
<td>.269</td>
<td>.265</td>
<td>.000</td>
<td>-.08</td>
</tr>
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</table>

Table 4.5: Hierarchical Multiple Regression Analyses Predicting Depression from Body Image Dissatisfaction, The Four Indices of Positive Psychological Adjustment, and Their Respective Interactions (N=368)
Table 4.6: Hierarchical Multiple Regression Analyses Predicting Self-Esteem from Body Image Dissatisfaction, The Four Indices of Positive Psychological Adjustment, and Their Respective Interactions (N=368)
<table>
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<th></th>
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<th>3</th>
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<th>5</th>
<th>6</th>
<th>7</th>
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<td>1</td>
<td>MBAS</td>
<td>.77**</td>
<td>.78**</td>
<td>.30**</td>
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<td>0.23**</td>
</tr>
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<td>.13*</td>
<td>.08</td>
<td>-.10</td>
<td>(-0.16)**</td>
</tr>
<tr>
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<td>MBAS-BDFT</td>
<td>.12*</td>
<td>.04</td>
<td>.52**</td>
<td>.56**</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>MBAS-HGT</td>
<td>.52**</td>
<td></td>
<td>(-.21)**</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Height</td>
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<td>.02</td>
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</tr>
</tbody>
</table>

Note: With an N of 368, * indicates significance at the .05 level, and ** indicates significance at the .01 level.

Table 4.7: Overall Correlations Among the MBAS and its Subscales, Participant Height, Participant Weight, and Participant Body Mass Index
Despite a growing literature, the nature of male body image is still not well understood. Unlike the literature on female body image, it is still unclear to what degree body image affects males and, more particularly, what components of body image are most salient. Accordingly, the main purpose of this study was to add to the existing knowledge on the nature of body image in men. Particularly, this study sought to examine the relationship between body image dissatisfaction and overall psychological health in men, while also exploring the reliability and validity of a new scale of male body image designed to improve upon shortcomings in preexisting male body image measures. It was hypothesized that body image dissatisfaction would be positively related to indices of psychological distress, and negatively related to indicators of positive psychological adjustment. It was also hypothesized that the relationship between body image dissatisfaction and indices of psychological distress would be moderated by the indicators of positive psychological adjustment (these variables would act as buffers, decreasing the incidence of psychological distress). Other hypotheses examined the validity of the MBAS, including its relationship to two extant body image measures and several demographic variables (weight, height, BMI).
The first main hypothesis of this study, that body image dissatisfaction would be positively related to indices of psychological distress, and negatively related to indicators of positive psychological adjustment, was supported. This suggests that body image in men is a practically significant issue, related to other more global psychological indices. In other words, increasing levels of body dissatisfaction in men appear to be related to an overall decrease in psychological health (increased symptom reports, lower levels of psychological resources), while conversely body image satisfaction appears to be related to increased psychological health (decreased symptoms reports, higher levels of psychological resources). These findings are similar to overall findings regarding body image in women, which are suggestive of a strong relation between body image dissatisfaction and negative psychological health outcomes (Garner & Garfinkel, 1982; Holson et al., 1981; Lerner et al., 1973; Mintz & Betz, 1986; Rierdan & Koff, 1997; Silberstein et al., 1988). Although this is a question relatively unexplored in men, several previous empirical studies support these findings (Cafri et al., 2002; McReary & Sasse, 2000; Olivardia et al., 2004; Pope et al., 1997; Ricciardelli & McCabe, 2004). More generally, this finding is supported by a growing empirical and theoretical literature indicating a growth in body image concerns for men (Labre, 2002; Leit et al., 2002; Leit et al., 2001; Mishkind et al., 1986; Pope et al., 1999).

The second main hypothesis of this study, that the relationship between body image dissatisfaction and indices of psychological distress would be moderated by the indicators of positive psychological adjustment, was not supported overall. Although several statistically significant interactions were observed, most interactions were not significant, and none of the interactions met criteria for practical significance. Nevertheless, the
magnitudes of the significant interaction effects obtained in the present study (i.e., accounting for between 1.0% - 2.0% of the criterion variance) were consistent with the magnitudes of moderator effects typically found in nonexperimental research (McClelland & Judd, 1993). In nonexperimental designs, the lack of control of variables results in increased measurement error, and this error is further increased when interaction terms are included in the analysis. In addition, interactions that exist are hard to detect in these designs, as it is both difficult and unusual for the moderator to change the direction of the relationship between two variables. In contrast, in experimental designs, variable manipulation facilitates the change in the direction of the association between two variables. Because of the substantial difficulties of detecting moderator effects in nonexperimental designs, magnitudes are typically small when moderator effects occur, usually accounting for approximately 1% to 3% of criterion variance (McClelland & Judd, 1993).

Thus, although not meeting one recommended standard for practical significance, the interaction effects observed in this study are not wholly inconsistent with typical findings. Thus, this suggests that these interactions deserve further examination, particularly using more advanced methods such as path analysis. Overall, however, the results suggest that the model proposed in this study is not a good fit for describing the nature of body image concerns in men. Although the indices of positive psychological adjustment do appear related to body dissatisfaction, they do not appear to serve a consistent buffering or protective role by reducing symptoms of psychological distress.

The third main area of hypotheses in this study regarded the reliability and validity of the MBAS. It was predicted that the MBAS overall scale and its three subscales would
demonstrate adequate reliability, as they have previously (Tylka et al., in press).

Furthermore, several hypotheses examined the relation of the MBAS and its subscales to the DMS, the DMAQ, and relevant demographic variables to assess convergent and concurrent validity. The reliability of the MBAS overall scale and its three subscales, as well as the convergent and concurrent validity of these scales, was supported.

One issue regarding the reliability of the MBAS appears worthy of consideration. Although the item total correlations for the two items comprising the height subscale was suitable in regards to this subscale, these items had poor item total correlations in regards to the overall scale, falling under the generally recognized cutoff point of .30 (Walsh & Betz, 2001). Although previous findings for these items fell within an acceptable range (Tylka et al., in press), a further issue has been previously noted regarding these items. That is, these two items are slightly different in nature, in that item 19 assesses dissatisfaction with height in general, while item 12 addresses dissatisfaction with not being tall enough. Although related, these two issues are not the same, as some tall men may be dissatisfied with their height. Thus, this subscale appears to require further conceptual and methodological examination.

Beyond the specific results of this study, another issue to consider is the attempted online recruitment. As previously noted, the online recruitment in this study was not successful. Along with difficulty in actually getting the study advertised to the target population, once advertised few participants appeared to be attracted. There are potentially a number of factors at work in this regard. On one level, the only reasons participants had to participate were their own intrinsic interest, a sense of conscientiousness in wanting to assist in this research, and potentially, given the nature of
the internet, boredom. Overall, it appears that few individuals were motivated to complete the study. One possible way to deal with this issue would be to provide something else of benefit to the participants (other than the invitation to inquire about the overall results of the study). For example, one recommendation in regards to online studies is to provide some sort of specific feedback that may be of interest to the participants (Kaye & Johnson, 1999). For example, providing results of a psychological test taken during the study. In this study, it may have been theoretically possible to provide results regarding a particular participant’s scores, such as feedback on the SWLS or the RSE. Some participants may find such feedback, even if only a numerical score with a corresponding descriptor, reason enough to complete the study. However, such a procedure raises further ethical questions, such as whether there could be negative effects on the participants of providing such feedback, how much information is required for adequate feedback, and whether this would pose threats to participant anonymity. Another way to attract participants might be to offer an unrelated reward, such as a gift certificate. Undoubtedly, some participants would be drawn by a financial inducement. However, such a practice also raises further questions to consider, such as the necessity of gathering identifying information in this case.

Another issue related to the procedures used in this study regards gaining trust of participants. The messageboards where permission was sought in this study are essentially online communities. Participants might be wary to trust and “outsider.” Thus, it may have been worthwhile to consider ways in which the primary researcher could have gained trust or credibility in such communities. Perhaps contributing an article related to the topic of male body image in a relevant online forum could be one way
beyond the specific study to provide a contribution to the community, demonstrate expertise, and gain trust.

A more general difficulty with some online recruitment procedures, including those used in this study, is ambiguity regarding the number of individuals who have read the study recruitment information, and a subsequent lack of ability to determine a response rate for the study. Given the nature of the online recruitment in this study, this factor impacts the ability to analyze the success of this recruitment measure. Although not a perfect indicator, one measure of response may be obtained through the structure of the messageboards. Four of the messageboards where the advertisement was posted indicated the number of times that the thread was opened by any messageboard user. For example, these four messageboards indicated the thread was opened a total of 73, 59, 44, and 28 times, respectively, for a total of 204 views.

One problem with using this as a measure is that this number does not take into account individual users opening the thread multiple times. For example, on one messageboard, several members posted disparaging remarks about the study. The moderator kindly responded in defense of the study, indicating that the author had sought permission first, and that the study appears to be legitimate. Given that these members posted in the thread, it is likely they read the thread several times. Thus, although in a general sense this recruitment method was not productive in this study, it is difficult to ascertain the relative efficiency of this method.

Overall, there are several limitations worthy of note in regards to this study. First, although current evidence supports the reliability and validity of the MBAS, such findings can only be considered tentative given the recent development of the MBAS.
Thus, further empirical examination will be required before the reliability and validity of this scale can be more confidently indicated.

Another limitation worthy of note is that only young adult men in college were used in this study. Thus, participants were also primarily Caucasian, heterosexual, and middle to upper-middle class. It is important to determine whether these findings, including the relation of body dissatisfaction to psychological outcomes and the reliability and validity of the MBAS, transfer to other samples of men, such as pre-adolescent and adolescent boys, community men not in college, men of color, male athletes, competitive male body-builders, and men in outpatient and inpatient eating disorder programs. For example, given findings that gay males may have higher rates of body dissatisfaction than heterosexual males (Yelland & Tiggemann, 2004), and findings in the general body image literature that body dissatisfaction may differ between racial and ethnic groups (Franko & Striegel-Moore, 2002; Perez, Voelz, Pettit, & Joiner, 2002), these two populations are certainly deserving of further study in men. Furthermore, given suggestions about the potential harmful effects of steroid abuse in men (Cafri, Thompson, Ricciardelli, McCabe, Smolake, & Yesalis, 2004), male bodybuilders, weightlifters, athletes, and other at risk populations are certainly deserving of examination.

Another limitation of this study regards the construct of psychological health. For this study, several salient measures of psychological distress and of positive psychological adjustment were used to operationalize this construct. However, it should be noted that such an approach is only suggestive. There may be other more particular indices of psychological health that are related or not related to body dissatisfaction. Thus, although the results of this study suggest an overall relationship to overall
psychological health, it is important not to assume that the relationships found in this study will transfer to other relevant variables. Thus, further empirical examination of other pertinent variables, such as eating disorder symptomatology or positive affectivity, is needed.

The internet-based methodology used in this study reveals another set of limitations. Firstly, internet-based research is a relatively new and still developing area, and thus standards regarding research are still in flux, making it more difficult to appraise the strengths and weaknesses of the methodology of this study. Nevertheless, some particular limitations can be identified. One strategy that several authors have recommended (Birnbaum, 2004; Kaye & Johnson, 1999) is the use of validity checks. For example, including an item that asks participants to mark “strongly agree” for this answer. Such approaches can potentially identify participants who are responding randomly. This technique was not incorporated in the present study. Similarly, another technique that has been recommended (Birnbaum, 2004; Kaye & Johnson, 1999) is the inclusion of a no response option for items. The rationale for such an inclusion is that it in its absence it is not clear whether a missing item response was purposeful or due to accidental omission. Although including such an option would not definitively discriminate between these two possibilities in the case of no response, as a participant could choose not to respond even with this option, it is reasonable to conclude that a participant marking this response option would indicate that they are purposefully not responding. Such a methodological detail might help in discriminating random item omissions from purposeful, nonrandom nonresponses. This technique was also not incorporated in the present study.
Overall, this study supports the practical significance of body image concerns in males. Although still a growing area of study, several other studies have gathered evidence of the relationship between body image dissatisfaction and psychological health in men (Cafri et al., 2002; McReary & Sasse, 2000; Olivardia et al., 2004; Pope et al., 1997; Ricciardelli & McCabe, 2004). Such findings have potential implications. For example, men may begin presenting such concerns more often in counseling. Furthermore, rates of steroid abuse, eating disorders, and other behavioral indices may be increasing in men, which can further impact the physical health, as well as the psychological health, of men experiencing significant body dissatisfaction (Cafri et al., 2004).

Given a current body of evidence supporting the reality of body image concerns in men, it is recommended that research into this area continue. Specifically, research into the practical import of body image dissatisfaction in men appears to be an important area worthy of continued study. An initial area of further study appears to be generalizing the results of the current study to broader populations of men, as well as specific populations likely to have a higher risk of experiencing body image concerns. As previously discussed, exploring body image dissatisfaction in gay males and across racial/ethnic groups is an important pursuit. As some studies have also suggested (McCabe & Ricciardelli, 2004), age and generational differences are also important to examine, given that body image concerns appear to differ across the lifespan. In the context of the current study, the question of whether body image dissatisfaction is related to psychological health is important to examine in all these groups. Also, exploring behavioral outcomes in men is also another task important to examine. It has been noted that although the
presence of eating disorder symptomatology sufficient to warrant a clinical diagnosis is rarely identified in men, it does appear that a higher percentage of men experience practically significant levels of symptomatology that don’t meet current diagnostic requirements (Harvey & Robinson, 2003). Clinician bias in the form of not considering an eating disorder as a diagnosis can often occur, in that men experiencing eating disorders often have a notably different presentation than women experiencing eating disorders. Thus, the relation of disordered eating symptomatology to body dissatisfaction is a topic needing to be examined. As other authors have noted, stigma is often attached to body dissatisfaction and eating issues suffered by men (Harvey & Robinson, 2003), which leads to underreporting, making it hard to know how prevalent such issues truly are in men.

It is also recommended that further consideration be given to developing conceptual models of body image in men. The model hypothesized in the current study does not appear to be supported. However, other theoretical models may yield better results, stimulating new hypotheses regarding body image. Such models may also facilitate the development of intervention models regarding body image in men. If current trends of increasing body image concerns in men continue, the practical significance of intervening will also subsequently grow.
APPENDIX A: NOMOTHETIC MODEL

Body Dissatisfaction

Indices of Positive Adjustment

Negative Psychological Health

MBAS, GHQ-28, CES-D, RSE

SWLS, PHS, PCS, LOT-R

83
Subject: Body Image Research Study

Hello. My name is Derek Bergeron. I am a graduate student in Counseling Psychology at The Ohio State University. I am currently working on my dissertation with my advisor, Dr. Don Dell, focusing on the topic of body image in men. I have decided that part of my study will be conducted using the Internet, so that I can locate a wide range of men who are interested in body image. This is why I am contacting you, as will be clearer shortly. I am contacting several websites, requesting that a brief advertisement for my study be posted. This ad contains a few lines describing the study, as well as the URL where the study is located, where people can go to find out more. Would you/I be able to post this brief ad in/on your homepage/newsletter/listserve/messageboard? If this would not be possible for whatever reason, I understand. But if it would be possible, this would be a great help to me in my research. If this is possible, I would need to receive a brief email indicating that I have permission for documentation purposes. If you have any questions about this study, you may certainly contact me or my advisor, Dr. Don Dell (our contact information is provided below). Thank you for your consideration.

Derek Bergeron, M.A.
The Ohio State University
(614) 425-2987
bergeron.12@osu.edu

Don Dell, Ph.D.
The Ohio State University
614-688-8287
dell.1@osu.edu
APPENDIX C: WEB ADVERTISEMENT

Are you a man who cares about your body? Do you think about your body often?

Are you a man interested in the topic of body image?

Do you wonder whether men think about their bodies as much as women reportedly do?

If you are a man in the 18 to 30 age range, your help is requested in a web-based psychology study. Your answers to several surveys can help in exploring several questions regarding how men view their bodies and potential effects this may have on them. If you are interested, please visit [url name] for more information. Thank you for your consideration.
This questionnaire aims to know if you have had any medical complaints, and how your health has been in general, over the past few weeks. Please answer the questions on the following pages simply by choosing the answer that you think most nearly applies to you. Remember that this questionnaire aims to know about present and recent complaints, not those that you had in the past.


Have you recently:

1. Been feeling perfectly well and in good health?
2. Been feeling in need of some medicine to pick you up?
3. Been feeling run down and out of sorts?
4. Felt that you were ill?
5. Been getting any pain in your head?
6. Been getting a feeling of tightness or pressure in your head?
7. Been having hot or cold spells?
8. Lost much sleep over worry?
9. Had difficulty staying asleep?
10. Felt constantly under strain?
11. Been getting edgy and bad-tempered?
12. Been getting scared or panicky for no good reason?
13. Found everything getting on top of you?
14. Been feeling nervous and uptight all of the time?
15. Been managing to keep yourself busy and occupied?
16. Been taking longer over the things you do?
17. Felt on the whole you were doing things well?
18. Been satisfied with the way you’ve carried out your tasks?
19. Felt that you are playing a useful part in things?
20. Felt capable of making decisions about things?
21. Been able to enjoy your normal day-to-day activities?
22. Been thinking of yourself as a worthless person?
23. Felt that life is entirely hopeless?
24. Felt that life isn’t worth living?
25. Thought of the possibility that you might do away with yourself?
26. Found at times you couldn’t do anything because your nerves were too bad?
27. Found yourself wishing you were dead and away from it all?
28. Found that the idea of taking your own life kept coming into your mind?
APPENDIX E: CENTER FOR EPIDEMIOLOGICAL STUDIES DEPRESSION SCALE

Select the answer that best describes your situation over the past week.
   0 = Rarely or none of the time
   1 = Some or little of the time
   2 = Occasionally or a moderate amount of the time
   3 = Most or all of the time

1. You were bothered by things that usually don't bother you.
2. You did not feel like eating; your appetite was poor
3. You felt that you could not shake off the blues even with help from your family or friends.
*4. You felt that you were just as good as other people.
5. You had trouble keeping your mind on what you were doing.
6. You felt depressed
7. You felt that everything you did was an effort
*8. You felt hopeful about the future
9. You thought your life had been a failure
10. You felt fearful
11. Your sleep was restless
*12. You were happy
13. You talked less than usual
14. You felt lonely
15. People were unfriendly
*16. You enjoyed life
17. You had crying spells
18. You felt sad
19. You felt that people disliked you
20. You could not get "going."

*=reverse scored
APPENDIX F: ROSENBERG SELF-ESTEEM INVENTORY

INSTRUCTIONS: Below is a list of statements dealing with your general feelings about yourself. Please answer the questions simply by choosing the answer that you think most nearly applies to you.


*1. On the whole, I am satisfied with myself.

2. At times I think I am no good at all.

*3. I feel that I have a number of good qualities.

*4. I am able to do things as well as most other people.

5. I feel I do not have much to be proud of.

6. I certainly feel useless at times.

*7. I feel that I'm a person of worth, at least on an equal plane with others.

8. I wish I could have more respect for myself.

9. All in all, I am inclined to feel that I am a failure

*10. I take a positive attitude toward myself.

*=reverse scored
APPENDIX G: SATISFACTION WITH LIFE SCALE

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below indicate your agreement with each item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

1. In most ways my life is close to my ideal.
2. The conditions of my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.
APPENDIX H: PSYCHOLOGICAL HARDINESS SCALE

Below is a list of statements dealing with how you view yourself. Please answer the questions simply by choosing the answer that you think most nearly applies to you.


1. I tend to “fall apart” pretty easily.*
2. I stop doing my school work when I’m unhappy in love.*
3. I’m one of those people who just keeps going no matter what happens.
4. It’s hard for me to keep at my work when the rest of my life is a mess.*
5. I tend to bounce back pretty quickly when life hands me a rotten deal.
6. I usually feel that no matter how bad I feel today, tomorrow will probably be better.
7. I know that if I just keep putting one foot in front of the other I’ll make it eventually.
8. Sometimes I just feel like giving up.*
9. I know if I try things will turn out well.
10. Sometimes life is just too much for me.*
11. It is hard for me to cope with more than 1 or 2 problems at a time.*
12. When faced with a difficult situation, I usually feel like I can handle it.
13. I often find it hard to get things done when I’m upset.*
14. When something interferes with my plans, I usually give up.*
15. I frequently feel overwhelmed by the things that happen in my life.*
17. When things aren’t going my way, I often feel hopeless.*
18. Stressful situations frequently make me ill.*
19. The statement “When the going gets tough, the tough get going” describes me pretty well.
20. I think I take failures and setbacks harder than a lot of people I know.*

*=reverse scored
The following statements deal with reactions you may have to various situations. Indicate how true each of these statements is depending on how you feel about the situation.


1. I am a “take charge” person.
2. I try to let things work out on their own.*
3. After attaining a goal, I look for another, more challenging one.
4. I like challenges and beating the odds.
5. I visualize my dreams and try to achieve them.
6. Despite numerous setbacks, I usually succeed in getting what I want.
7. I try to pinpoint what I need to succeed.
8. I always try to find a way to work around obstacles; nothing really stops me.
9. I often see myself failing so I don’t get my hopes too high.*
10. When I apply for position, I imagine myself filling it.
11. I turn obstacles into positive experiences.
12. If someone tells me I can’t do something, you can be sure I will do it.
13. When I experience a problem, I take the initiative in resolving it.
14. When I have a problem, I usually see myself in a no-win situation.*

*=reverse scored
APPENDIX J: LIFE ORIENTATION TEST-REVISED

Below is a list of statements dealing with how you view yourself. Please answer the questions simply by choosing the answer that you think most nearly applies to you.

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

1. In uncertain times, I usually expect the best.

2. If something can go wrong with me, it will.*

3. I’m always optimistic about my future.

4. I hardly ever expect things to go my way.*

5. I rarely count on good things happening to me.*

6. Overall, I expect more good things to happen to me than bad.

*=reverse scored
APPENDIX K: MALE BODY ATTITUDES SCALE

Please indicate whether each question is true about you always, usually, often, sometimes, or never.

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Usually</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I think I have too little muscle on my body.</td>
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<td></td>
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<tr>
<td>2</td>
<td>I think that my body should be leaner.</td>
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<tr>
<td>3</td>
<td>I wish that my arms were stronger.</td>
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<tr>
<td>4</td>
<td>I feel satisfied with the definition in my abs (i.e., stomach muscles).*</td>
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<tr>
<td>5</td>
<td>I think that my legs are not muscular enough.</td>
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<tr>
<td>6</td>
<td>I think my chest should be broader.</td>
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<td>7</td>
<td>I think my shoulders are too narrow.</td>
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<td>8</td>
<td>I am concerned that my stomach is too flabby.</td>
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<tr>
<td>9</td>
<td>I think that my arms should be larger (i.e., more muscular).</td>
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<tr>
<td>10</td>
<td>I feel dissatisfied with my overall body build.</td>
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<tr>
<td>11</td>
<td>I think that my calves should be larger (i.e., more muscular).</td>
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<td>12</td>
<td>I wish I were taller.</td>
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<tr>
<td>13</td>
<td>I think that I have too much fat on my body.</td>
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<tr>
<td>14</td>
<td>I think that my abs are not thin enough.</td>
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<tr>
<td>15</td>
<td>I think my back should be larger and more defined.</td>
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<tr>
<td>16</td>
<td>I think my chest should be larger and more defined.</td>
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<tr>
<td>17</td>
<td>I feel satisfied with the definition in my arms.*</td>
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<tr>
<td>18</td>
<td>I feel satisfied with the size and shape of my body.*</td>
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<tr>
<td>19</td>
<td>I am satisfied with my height.*</td>
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<tr>
<td>20</td>
<td>Has eating sweets, cakes, or other high calorie food made you feel fat or weak?</td>
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<tr>
<td>21</td>
<td>Have you felt excessively large and rounded (i.e., fat)?</td>
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<tr>
<td>22</td>
<td>Have you felt ashamed of your body size or shape?</td>
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<tr>
<td>23</td>
<td>Has seeing your reflection (e.g., in a mirror or window) made you feel bad about your size or shape?</td>
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<td></td>
</tr>
<tr>
<td>24</td>
<td>Have you been so worried about your body size or shape that you have been feeling that you ought to diet</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*=reverse scored
APPENDIX L: THE DRIVE FOR MUSCULARITY SCALE

Please indicate whether each question is true about you always, usually, often, sometimes, or never.

1. I wish that I were more muscular.
2. I lift weight to build up muscle.
3. I use protein or energy supplements.
4. I drink weight-gain or protein shakes.
5. I try to consume as many calories as I can in a day.
6. I feel guilty if I miss a weight-training session.
7. I think I would feel more confident if I had more muscle mass.
8. Other people think I work out too often.
9. I think that I would look better if I gained 10 pounds in bulk.
10. I think about taking anabolic steroids.
11. I think that I would feel stronger if I gained a little more muscle mass.
12. I think that my weight-training schedule interferes with other aspects of my life.
13. I think that my arms are too small.
14. I think that my chest is not big enough.
15. I think that my legs are not big enough.
APPENDIX M: DRIVE FOR MUSCULARITY ATTITUDES QUESTIONNAIRE

Below are eight statements that you may agree or disagree with. Using the 1 - 5 scale below indicate your agreement with each item.


1. I do not want to become more muscular.*
2. I wish my legs were more muscular.
3. When I see a guy who is really muscular, it inspires me to get muscular myself.
4. Muscularity is important to me.
5. I think I need to gain a few pounds of bulk (muscle mass).
6. I do not wish my arms were more muscular.*
7. I should work out more to increase muscle mass.
8. I would feel more confident if my lats (back muscles) were bigger.

*=reverse scored
APPENDIX N: REP WEBSITE-STUDY DESCRIPTION

This study will examine body image issues in males. Specifically, body image satisfaction and preoccupation will be measured, along with other psychological constructs such as self-esteem and optimism. Participants will complete several brief measures and a demographics questionnaire. Participation should take approximately thirty to forty five minutes. Only males in the 18 to 30 age range may apply.
Welcome. My name is Derek Bergeron, and I will be leading the study today, entitled Body Image and Well-Being. The principal investigator for this study is my advisor, Dr. Don Dell.

This study is entirely computer based. In a minute, I will ask you to begin reading the first page on the computer you are sitting at. This will provide you with information about the study, and the instructions on how to proceed.

When you are finished with the study, you can come up to me to make sure you receive your research credit. You may now begin.
APPENDIX P: PARTICIPANT INFORMATION PAGE

Thank you for your interest in this study. Before beginning, I would like to provide you with some information regarding this study. Please read this carefully.

*What is the purpose of this study?*
The following study focuses on exploring male body image. The purpose of the study is to explore whether body image in men is related to a variety of other psychological constructs, such as self-esteem and optimism.

*What will this study involve?*
This study contains several questionnaires that ask a variety of questions regarding one’s thoughts, feelings, and behaviors. The study contains approximately 150 one-sentence items to respond to, which altogether should take around 30 to 45 minutes of your time.

*Who can participate in this study?*
This study is designed only for men in the 18 to 30 age range. If you are not male or do not fall within this age range, please do not complete this study.

*What are possible disadvantages of taking part in this study?*
Given that this study will take about 30 to 45 minutes of your time, you may find this inconvenient. Please take this into account before beginning, and choose a convenient time for yourself to complete it if you wish to do so. Also, this study may ask some questions that you find personal, or may make you feel uncomfortable. If this happens, you can simply leave any question blank if you do not wish to answer it. Furthermore, you can end the study at any time simply by closing your web browser.

*What are the possible benefits of taking part in this study?*
The main benefits of participating in this study lie in the contribution you would make towards further understanding male body image. There are likely no direct benefits you would receive.

*Will my taking part in this study be kept confidential?*
Yes. This study will not request any identifying information from you, such as your name or address. Therefore, your responses are anonymous.

*What if I am interested in the results of this study?*
You may contact the researchers for this study, listed at the bottom of this page, for more information.

Who has reviewed this study?
The procedures for this study have been reviewed by the Behavioral and Social Sciences Institutional Review Board at The Ohio State University.

Thank you. If you have any other questions, you may contact:

**Dr. Don Dell**

Dell.1@osu.edu  
614-688-8287

**Derek Bergeron**

1498 Belmont Ave #A  
Columbus, OH 43201  
Bergeron.12@osu.edu  
(614) 425-2987

**Office of Responsible Research Practices (ORRP)**

Phone: (614)688-8457  
Address:  
The Ohio State University  
Third Floor Research Foundation Building  
1960 Kenny Road  
Columbus, Ohio  
43210-1063

To continue with this study, you will be presented with a brief informed consent form, which describes that you understand several points discussed in this information. To go to the informed consent form and continue with this study, please click here: ___.

100
APPENDIX Q: INFORMED CONSENT

By clicking to continue, I indicate that I understand the procedures involved in this study.

I am aware that I have the right to ask questions and receive answers related to this study by contacting the investigators: Dr. Don Dell, dell.1@osu.edu, (614) 688-8287; Derek Bergeron, M.A., bergeron.12@osu.edu, (614) 425-2987. Furthermore, if I have questions about my rights as a research participant, I can call the Office of Research Risks Protection at (614) 688-4792.

I am aware that I have the right to refuse to participate and may withdraw at any time without any penalty, simply by closing my web browser. Furthermore, I know I do not have to answer any question that I do not wish to, and can merely skip such questions. I understand that my participation is voluntary.

Click here to indicate your consent and continue with this study: ___
APPENDIX R: DEMOGRAPHICS QUESTIONNAIRE

Please answer the following questions about yourself.

1. Please identify your Race/Ethnicity
   d. Hispanic-American, Latino/Latina       e. Native American       f. Other _________

2. What is your age? ___

3. What is your educational attainment (i.e. the highest level of education you have completed)? ______

4. How would you describe your sexual orientation?
   a. heterosexual       b. homosexual       c. bisexual

5. What is your weight? _____

6. What is your height? ______

7. Do you participate in any organized sports? Yes  No
   If so, which sport(s) do you participate in? ______________________________

8. Do you participate in any recreational fitness activities?
   If so, please indicate those that you participate in: _______________________

9. Do you lift weights regularly? Yes  No
APPENDIX S: DEBRIEFING STATEMENT

**Body Image and Well-Being**

The study you just participated in assessed the relationship between satisfaction with one’s body, preoccupation with one’s body, and a variety of psychological states, such as self-esteem and optimism. Overall, this study focuses on exploring male body image. Body image is basically an individual’s perception of their own body, which includes physical appearance, size, shape, etc. It has been hypothesized that unrealistic images portrayed by modern media have been a factor in individuals developing unrealistic body ideals. Comparing one’s own body to these ideals often leads to dissatisfaction.

It has been noted that images of a more extreme male ideal are being increasingly presented in our society. Research has also indicates that males and females differ in their body image perceptions. Women typically desire to lose weight, while males wish to gain weight. This suggests that using the same theories and measures in studying body image for men and women is invalid. Based on these things, the goal of this study was to develop a better understanding of male body image utilizing measures designed for men.

Please feel free to ask any questions about the study or the concepts presented. If you have any questions or want to hear about the results, you can contact the Principal Investigator, Dr. Don Dell, at 688-8287 or dell.1@osu.edu; or the Co-Investigator, Derek Bergeron, at 425-2987 or bergeron.12@osu.edu. Furthermore, if the content of this study brought up questions or issues that you would like to explore with someone, an option is to consider pursuing counseling to discuss these issues. You can do so by looking in the yellow pages under counseling, therapy, and psychology, for example. Another option is to contact your state board of mental health, which often provides referral services.

Thank you very much for your participation.
How do you keep your data secure?

Our privacy policy states that we will not use your data for our own purposes. The data you collect is kept private and confidential. In regards to the security of our infrastructure, here is an overview of our setup. The servers are kept at Berbee Networks (www.berbee.com) and owned and maintained by SurveyMonkey staff.

Physical Security

- Servers kept in locked cage
- Entry requires a passcard and biometric recognition
- Digital surveillance equipment
- Controls for temperature, humidity and smoke/fire detection
- Staffed 24/7

Network Security

- Multiple independent connections to Tier 1 Internet access providers
- Fully redundant OC-48 SONET Rings
- Uptime monitored every 5 minutes, with escalation to staff
- Firewall restricts access to all ports except 80 (http) and 443 (https)

Hardware Security

- Servers have redundant internal power supplies
- Data is on RAID 10, operating system on RAID 1
- Servers are mirrored and can failover in less than one hour

Software Security

- Code in ASP, running on SQL Server 2000 and Windows 2000 Server
- Latest patches applied to all operating system and application files
- SSL encryption of all billing data
- Data backed up every hour internally

Data backed up every night to centralized backup system, with offsite backups in event of catastrophe
LIST OF REFERENCES


Carver, C., & Scheier, M. (2002). Optimism. In C. Snyder & S. Lopez (Eds.), *The


Drewnowski, A. (1987). Men and body image: are males satisfied with their bodyweight? Psychosomatic Medicine, 49(6), 626-637.


Garner, D., Olmsted, M., Bohr, Y. & Garfinkel, P. (1982). The eating attitudes test:
Psychometric features and clinical correlates. *Psychological Medicine, 12*, 871-878.


constructs of the Beck Depression Inventory and the Center for Epidemiological Studies Depression Scale. *Educational and Psychological Measurement, 63*, 319-335.


