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Potential Antecedents of Muscle Dysmorphia

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POTENTIAL ANTECEDENTS OF MUSCLE DYSMORPHIA

A Thesis
Presented to
The Faculty of the Department of Psychology
Western Kentucky University
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Of the Requirements for the Degree
Master of Arts

By
Crystal T. Henson

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POTENTIAL ANTECEDENTS OF MUSCLE DYSMORPHIA

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The present study was designed to gain a better understanding as to some of the possible contributing factors of muscle dysmorphia. Muscle dysmorphia is an under recognized form of Body Dysmorphic Disorder. Individuals who are diagnosed with muscle dysmorphia are in reality very large and muscular, but they have a profound fear and belief that they are small and weak. These individuals go to extreme lengths to increase their amount of lean muscle mass. This includes behaviors such as spending hours in the gym, excessive attention to one’s diet, and use of steroids or nutritional supplements. These individuals experience extreme anxiety if they are unable to work out or deviate from their diet.

To date, what is known about muscle dysmorphia is that it seems to mimic a lot of the same factors as eating disorders. High degrees of perfectionism, less satisfaction with one’s body, and negative affect have all shown to contribute to eating disorders in women. It was hypothesized that higher degrees of perfectionism, lower levels of body satisfaction, and higher degrees of negative affect would be indicative of individuals with more symptoms of muscle dysmorphia.

Participants completed self-report measures of muscle dysmorphia symptomology (DI), negative affect (PANAS), perfectionism (MPS), and body satisfaction (BA). A stepwise regression was used to determine which factors contributed the most to muscle
dysmorphia symptomology. Results indicated that concern over mistakes from the
perfectionism scale and upper body strength from the body satisfaction scale were the
best predictors of muscle dysmorphia symptomology. These factors contributed to 31%
of the variance in muscle dysmorphia symptomology.
Introduction

Body Dysmorphic Disorder (BDD) is characterized by an impairing preoccupation with either real or imagined defects in one’s body appearance; in those individuals who have some form of body defect the amount of impairment is more than would be expected (American Psychiatric Association [APA], 2000). Individuals with this disorder may feel as if they are too ugly or deformed to show themselves in public. Although estimates of BDD in the general population are unknown, it seems to be equally common across both genders in outpatient settings. Individuals diagnosed with BDD commonly complain about body parts in the area of the face and head (i.e., nose, teeth, hair). Phillips and Diaz (1997) found that of 95 men diagnosed with BDD most were concerned with things such as hair, skin, facial features, and penis size. Over the past few decades, growing social pressure for men to appear more lean and muscular has lead to another body preoccupation known as muscle dysmorphia.

Muscle Dysmorphia

Men have begun spending hours in the gym and restricting their diets to help increase the amount of lean muscle mass they attain. Pope, Phillips, and Olivardia (2000a) referred to this obsession as the “Adonis Complex” and used this term to describe this preoccupation with one’s physique. In 1993, Pope, Katz, and Hudson described a condition in a population of young weight lifters. They called it reverse anorexia. Pope et al. (1993) used this term to describe individuals who, though in reality were large and muscular, had a profound fear and belief that they were small and weak. In their study, Pope et al. (1993) evaluated 108 males who had been recruited from
gymnasiums in the Boston and Los Angeles areas. Results of the study indicated that 51% (55) admitted to having used steroids, and 2.8% (3) of the participants indicated a past history of anorexia nervosa (AN). Two of the three men who reported a past diagnosis of AN, along with seven others, reported a history of reverse anorexia; all nine individuals also reported a history of steroid use.

Later, Pope, Gruber, Choi, Olivardia, and Phillips (1997) coined the term muscle dysmorphia and came up with the following diagnostic criteria. First, the individual must have a preoccupation with the idea that his/her body is insufficiently lean and muscular. This behavior includes such practices as spending hours in the gym weight lifting and excessive attention to one’s diet as an attempt to gain muscle mass. Second, the preoccupation must cause significant impairment to the individual’s social, occupational, or academic functioning. The impairment is seen in at least two of the following: 1) the individual forgets about important social, occupational, or recreational activities due to the compulsive need to maintain a strict workout and/or diet schedule; 2) the individual avoids situations where his/her body may be seen by others and endures such a situation only with extreme distress or anxiety; 3) the preoccupation with the inadequacy of one’s body size or muscularity causes clinically significant distress or impairment in important areas of functioning; and 4) the individual persists in his/her workout, diet, and/or use of substances such as anabolic steroids despite having been informed of the possible adverse effects both physically and psychologically. The last criterion states that these individuals become anxious or upset if they are unable to work out or if they deviate from their diet.
History of the Ideal Male Body

The societal pressure that men have been facing over the past few decades to increase the amount of lean muscle mass they possess has been seen in both the media and culture. In American culture, the ideal male body has become increasingly more muscular. In 1999, Pope, Olivardia, Gruber, and Borowieck examined the physiques of male action toys. They collected examples of some of the most popular American action toys produced over the past 30 years. They then measured the chest, waist, and bicep circumference of each figure and scaled it to an actual man. They found that over the past 30 years, action figures have become increasingly more muscular, with some far exceeding what is attainable by humans. These results seem to mirror the similar studies that were done with the female doll Barbie, in which it was found that Barbie’s measurements are unattainable by humans (Norton, Olds, Olive, & Dank, 1996). The researchers suggest that just as it is possible that Barbie depicts an unrealistic expectation for girls, male action figures could very well be sending the same message to boys. However, these trends do not stop with children’s toys.

It has also been proposed that the incidence of eating disorders among both men and women alike would be correlated with societal norms promoting thinness (Anderson & DiDomenico, 1992). Anderson and DiDomenico began by examining articles and advertisements of 10 magazines popular among young men and women. They looked for articles or advertisements promoting weight loss or change of body shape. Though said articles/advertisements were significantly more prevalent in magazines targeted for females, there were comparably more shape articles/advertisements than weight loss
articles/advertisements in magazines directed towards males. As one may expect, there were more dieting articles/advertisements in magazines directed towards females. As hypothesized, these findings seem to suggest that as society’s idea of what people should look like changes, advertisements also change and promote these same ideals. Coincidentally, research data have shown that the ratio of women to men diagnosed with eating disorders is approximately 10:1, the same ratio seen with the shape ads to weight loss ads.

A similar study was performed by Pope, Olivardia, Borowiecki, and Cohane (2001). In this study, the researchers proposed that advertising supports the current trend of the male body being an important factor in determining masculinity. They looked at the proportion of exposed male and female bodies used in advertisements in two popular American women’s magazines between the years 1958 and 1998. Undressed was operationally defined as “a man or woman whose lack of clothing would be considered inappropriate if they [sic] were walking down a downtown street” (Pope et al., 2001, p. 190). They found that in both magazines, the proportion of undressed women in advertisements has remained relatively constant over the past 40 years, whereas the proportion of undressed men showed a dramatic increase, especially since the early 1980s. The findings offer support for the hypothesis that society seems to view the male body as a sign of masculinity. This same trend is also found in areas other than advertising.

Leit, Pope, and Gray (2000) examined whether cultural ideals of male magazine models had changed over the past 25 years. They examined 15 male centerfold models in
Playgirl magazine from 1973-1997. They then calculated the body mass index and fat-free muscle mass index of each centerfold model. Their results showed that Playgirl centerfold models have become increasingly dense and muscular over the past 25 years. These findings support an increase of social pressure on males to become more muscular.

Current Trends

Now that there is some idea as to the pressures society is now placing on men to become more muscular, important questions have emerged. Are men buckling under this pressure? To what extent are men trying to live up to these newly found, cultural ideals?

To help determine the effect that this new muscle trend has had on males, Grieve (2001) conducted a study to see if men would report their ideal body shape to be more muscular than their current body shape and would report that women find a more muscular body more attractive. A comparable study with women found that women tend to report their ideal body shape to be thinner than their current body shape and report that men find a thinner body more attractive (Fallon & Rozin, 1985). Grieve created nine figure drawings of males ranging from extremely thin to extremely muscular. Both male and female undergraduates participated. Males were asked three questions: 1) Which figure best represents your current body shape? 2) Which figure would you like to look like? and 3) Which figure do you think women find most attractive? Females were asked which figure they found most attractive. Results showed that men reported their ideal body shape to be more muscular than their current body shape. Men also believed that women found a more muscular shape more attractive than was actually reported by women. These results suggest that men are at risk for having or developing a disturbed
body image because their ideal body image is not comparable to the body image they can actually obtain.

Pope et al. (2000b) performed a cross-cultural study. The authors proposed that men in Western societies would want a much leaner and more muscular body than the men believed they already possessed. The participants were college-aged men in Austria, France, and the United States. Height, weight, and body fat were measured for each participant. The men were then asked to choose from a computer the body image that they felt best represented 1) their own body, 2) their ideal body, 3) the body of the average male their age, and 4) the male body they thought women preferred. Results revealed that in all three countries, men chose an ideal body that was, on average, 28 lbs more muscular than themselves. They also estimated that women preferred a male body, on average, about 30 lbs more muscular than themselves. These findings may explore the apparent increase of muscle dysmorphia and the use of anabolic steroids. The use of steroids would allow these individuals to obtain even larger muscles than lifting weights and restricting diets alone.

Current Research on Muscle Dysmorphia

Due to the fact that research in this area is still relatively new, little is known about prevalence, causes, or treatment of muscle dysmorphia. To date, the only prevalence estimates come from a sample of bodybuilders in which 10% had muscle dysmorphia (Pope et al., 1993). However, this percentage may be an overestimate of the general population. Of the research that has been performed, the following has been found: muscle dysmorphia seems to have many similarities to anorexia nervosa
(Schnirring, 2000). These similarities include shame about body image, history of anxiety or depression, and compulsive behaviors that may be self-destructive. One third of men diagnosed with muscle dysmorphia also show symptoms of eating disorders such as binging or restricting their food intake (e.g., extremely low fat or high protein diets). Of these individuals, more than half reported use of anabolic steroids. Use of nutritional supplements is a very common occurrence seen in almost all individuals with muscle dysmorphia (Schnirring, 2000).

**Perfectionism**

Perfectionism has been explored as a possible contributor for the development of eating disorders. Currently, several studies yielded evidence to support a connection between characteristics of perfectionism and eating disorders. Perfectionism is defined by Nugent (2000) as “the compulsive striving for unrealistic and unattainable goals” (p. 215). Measures used to assess perfectionism look at the participants’ tendency to set rigid, unrealistic standards for themselves, how often they strive to reach these standards, and whether or not the lack of complete success is seen as total failure (Predicting the Onset, 2002).

In a study conducted by Cassidy, Allsopp, and Williams (1998), individuals who were admitted into an adolescent eating disorders clinic were compared to individuals in a child and adolescent psychiatry service in the same area. The participants were asked to complete several questionnaires assessing degrees of obsession and compulsion, levels of depression, the Eating Disorder Inventory (Garner, Olmstead, & Polivy, 1983), the Intrusive Thoughts Questionnaire (Allsop & Williams, 1996), and the Family
Adaptability and Cohesion Evaluation Scales (Olson, 1986). The study examined the prevalence and nature of obsessive-compulsive symptoms in adolescents with eating disorders compared to a psychiatric control group. Though the results did little toward clarifying the relationship between obsessions and compulsions with eating disorders, the indication was that individuals with disordered eating scored higher than those individuals without disordered eating in the areas of desire for thinness, body satisfaction, and perfectionism. The results help support the idea that characteristics of perfectionism may lead to the development of eating disorders.

Vohs et al. (2001) looked at the relationship between perfectionism, body dissatisfaction, and self-esteem as predictors of bulimic symptoms. Participants were 70 females from a southern state university, recruited from Introductory Psychology classes. Participants were asked to complete several questionnaires about personal feelings and attitudes and were asked to return five weeks later to complete the same set of questionnaires. Participants completed the Beck Depression Inventory (Beck, Rush, Shaw, & Emery, 1979), the Beck Anxiety Inventory (Beck & Steer, 1993), and the Eating Disorders Inventory (Garner, Olmstead, & Polivy, 1983). The results indicated that the combination of higher perfectionist characteristics, along with higher levels of body dissatisfaction, and low self-esteem related to increased bulimic symptoms.

Research studies have supported a connection between characteristics of perfectionism and eating disorders in girls and women; women diagnosed with eating disorders have more characteristics of perfectionism. Because muscle dysmorphia seems
to mimic eating disorders in many ways, it is expected characteristics of perfectionism will contribute to increased muscle dysmorphia symptomology.

Body Image

Thus far, most body image research has focused on females and how they strive to reach their ideal body image, but little has been done to determine how men reach their ideal body image. The techniques used by females to obtain their ideal body often focus on losing weight, whereas males are more interested in gaining weight/muscle which is more consistent with healthy or health conscious perspectives and behavior (McCabe & Ricciardelli, 2001b). It has been observed that many males have same-sex role models that tend to encourage them to exercise in order to obtain the bulk they desire.

McCabe and Ricciardelli examined the difference in disturbed body image and strategies to change body shape among adolescent boys and girls. They looked at how gender, age, and body mass index related to ways to increase weight and muscles and ways to decrease weight. Participants were adolescents in grades seven to ten. Participants were asked to complete the Body Image and Body Change Inventory (McCabe & Ricciardelli, 2001a). Results indicated that adolescent girls reported less body satisfaction than did boys, body appearance was reported as more important to them than to the boys, and they reported more behaviors related to weight loss. Boys, on the other hand, were more likely to report behaviors to increase weight and muscle tone. For boys and girls, body dissatisfaction, use of food supplements, and behaviors to increase both weight and muscle tone tended to increase with grade level. Boys were perceived as encouraging their peers with low Body Mass Index (BMI) scores to increase weight and
muscle tone. Girls were reported to encourage weight loss in their peers, regardless of BMI.

A study conducted by Hausenblas and Fallon (2002) looked at the relationship among body image, exercise behavior, body mass index (BMI), and exercise dependence symptoms. The authors hypothesized that 1) for women, BMI would be a stronger predictor of body image than exercise behavior, and 2) for men, exercise would be more related to body image than body composition. College students (N= 474) from a southeastern university were asked to complete the Drive for Thinness subscale of the Eating Disorder Inventory, the Leisure Time Exercise Questionnaire (Godin, Jobin, & Bouillon, 1986), the Body-Areas Satisfaction Scale (Cash, 1990), the Social Physique Anxiety Scale (Martin, Rejeski, Leary, McAuley, & Bain, 1997), and the Exercise Dependence Scale (Hausenblas & Symons Downs, 2002). BMI was also computed using self-reported height and weight.

The results indicated that characteristics of social physique anxiety were the strongest predictor of body satisfaction for the women. For men, exercise behavior was the strongest predictor of body satisfaction and social physique anxiety. Men who reported exercising more had higher levels of body satisfaction and lower levels of social physique anxiety.

Men’s body esteem often focuses on upper body strength and physical condition, both of which can be obtained only through exercise. This factor appears to be one of the reasons why men who are more physically active perceive themselves as more physically fit, regardless of weight (Davis, Elliott, Dionne, & Mitchell, 1991.) Men who are more
physically active also report greater satisfaction with their bodies. This factor does not mean that men are not interested in losing weight. A recent study suggested that almost half of all men want to gain weight, while the other half want to lose weight (Davis & Cowles, 1991).

In a study looking at 112 women and 88 men, 80% in each group expressed a desire to lose weight (Davis & Cowles, 1991). Older men expressed a desire to lose weight, while younger men expressed a desire to gain weight. This study also found that men who exercise are equally dissatisfied with their weight and with different aspects of their appearance when compared to one another, but this dissatisfaction seems to vary based on age; that is, those men who are older want to decrease weight while those that are younger want to increase weight.

Research reviewed has shown that those men who exercise report being more satisfied with their body image. However, individuals with symptoms of muscle dysmorphia may exercise and still be very unsatisfied with their body image. It would follow, then, that less satisfaction with body image would contribute to more muscle dysmorphia symptomology.

*Negative Affect*

Ricciardelli and McCabe (2001b) performed a study looking at whether self-esteem and negative affect moderate sociocultural influences in predicting body dissatisfaction and body change strategies to decrease weight and increase muscle. Participants were 587 boys and 598 girls between the ages of 12 and 15. Participants were asked to complete three subscales from the Body Image and Body Change
Inventory (Ricciardelli & McCabe, 2001a): body dissatisfaction, strategies to decrease weight, and strategies to increase muscle. Sociocultural pressures were assessed using the Perceived Sociocultural Influences on Body Image and Body Change Questionnaire (McCabe & Ricciardelli, 2001c). Self-esteem was assessed using the General Self Scale from Marsh’s Self Description Questionnaire-II (Marsh, 1990). Finally, negative affect was assessed using the short form of the Depression, Anxiety, and Stress Scale (Lovibond & Lovibond, 1995).

The results indicated that, for boys, perceived pressure to lose weight and increase muscle came from mothers, fathers, and same-sex best friends. However, those boys with higher self-esteem seemed to moderate this pressure; that is, those with higher self-esteem seemed to be less susceptible to the sociocultural pressure they perceived. Negative affect was found to impact both strategies to decrease weight and increase muscle for boys, but no association was found between negative affect and body dissatisfaction. The results for girls indicated negative affect had a direct effect on body dissatisfaction and strategies to decrease weight; that is, those girls with a higher degree of negative affect were less satisfied with their bodies and were more likely to have strategies to decrease weight. Both boys and girls with higher levels of negative affect were more likely to perceive more sociocultural pressures directed at increasing muscles.

Negative affect has shown to have an impact on weight loss and extreme dieting behaviors among adolescent girls and adult women; however, few studies have been conducted looking at weight loss strategies among men in comparison with women. Results from current research reviewed indicate that both positive and negative affect
show a closer relation to body-change strategies than self-esteem among children between the ages of 8 and 11 (McCabe & Ricciardelli, 2003). Negative affect, however, was associated only with intentions to increase muscle, rather than actual strategies to do so in this young population. The results would suggest that boys as young as 8 years old have the intention of implementing behaviors to change their body shape and increase the amount of muscle they have, but have yet to do so. However, very little is known about how negative affect influences individuals who are older and more willing and able to engage in the type of behaviors needed to obtain the body shape they desire.

Research studies have shown that those individuals with higher degrees of negative affect are more likely to be dissatisfied with their body and have an increased desire it. Because individuals with muscle dysmorphia report being unsatisfied with their bodies, it is expected negative affect will contribute to muscle dysmorphia symptomology.

Limitations of the Current Research and The Present Study

Research in the area of muscle dysmorphia is limited. Little is known about the etiology or possible risk factors of the disorder. To date, it is known that this disorder appears to mimic many of the same risk factors that are seen in individuals with eating disorders. The current study hoped to identify some of the potential antecedents of muscle dysmorphia. The purpose of this study was to identify the contribution of perfectionism, body satisfaction, and negative affect to muscle dysmorphia symptomology.
It is expected that perfectionism, negative affect, and body dissatisfaction will have both a direct and indirect influence on symptoms of muscle dysmorphia. The proposed relationships were taken from the model proposed by Grieve (2003) and are seen in Figure 1.

Figure 1:
Direct and Indirect Influences of Each Independent Variable on the Dependent Variable

Hypothesis

The current study hypothesized that higher degrees of perfectionism, lower levels of body satisfaction, and higher degrees of negative affect would be indicative of individuals with more symptoms of muscle dysmorphia.
Methods

Participants and Design

Participants were 151 male volunteers from Western Kentucky University. Participants were recruited through psychology classes, residence halls, and weight lifting classes. The mean age of participants was 20.94 years ($SD = 3.36$). The mean education level was 14.48 years ($SD = 1.20$). There were 126 (83.4%) Caucasian participants, 14 (9.3%) African American participants, 8 (5.3%) participants of other races, and 3 (2%) participants who chose not to reveal this information. There were 144 (96%) single participants and 6 (4%) married participants. One participant chose not to reveal this information. The mean weight of the participants was 180.62 lbs ($SD = 36.32$). The mean height was 70.99 inches ($SD = 2.72$). The mean Body Mass Index (BMI) was 25.76 ($SD = 2.72$).

The design of this study was a quasi-experimental design. The dependent variable was symptoms of muscle dysmorphia. The independent variables were characteristics of perfectionism, amount of body satisfaction, and degree of negative affect.

Measures

Demographics. Each participant completed a demographics survey (see Appendix A). Participants were asked to report their age, ethnicity, education level, and marital status.

Muscle Dysmorphia. To assess symptoms of muscle dysmorphia, participants were asked to complete a modified version of the Dysmorphia Inventory (DI; Suarez, Crowe, & Crowe, 2001; see Appendix B). The DI assesses weight and height, along with
30 questions that are answered on a 5-point, Likert-type scale ranging from 1 (Never) to 5 (Always). The DI is scored by obtaining the sum of all 30 questions. The DI has good internal consistency with a Cronbach’s alpha of .88. When a principal components factor analysis was performed, items on the DI loaded onto five factors. The factors are appearance discomfort (23.8%), worrying and checking (17.6%), somatic/concentration (15.7%), perception by others (12.3%), and escape avoidance (8.5%). For the purpose of this study, six questions specifically addressing muscle dysmorphia were added to the scale. These items were 1) I lift weights to enhance my appearance, 2) I have given up other activities to spend more time lifting weights, 3) I think of myself as being small, 4) I spend 30 minutes or more a day thinking about lifting weights, 5) I avoid social situations because of these thoughts, 6) I use nutritional supplements or drugs to enhance my appearance.

Perfectionism. Perfectionism was assessed by having participants complete the Multidimensional Perfectionism Scale (MPS; Frost, Marten, Lahart, & Rosenblate, 1990; see Appendix C). The MPS assesses perfectionist characteristics, divided into six factors. These factors are concern over mistakes, personal standards, parental expectations, parental criticism, doubts about actions, and organization. It consists of 35 items that are answered on a 5-point, Likert-type scale ranging from 1 (Strongly Agree) to 5 (Strongly Disagree). The MPS is scored by obtaining the sum of all 35 items. The MPS has good internal consistency with a Cronbach’s alpha of .91. The MPS is highly correlated with the Burns Perfectionism Scale (BPS; Burns, 1980), $r = .85$, showing adequate convergent validity.
Body Satisfaction. Body satisfaction was assessed using the Body Assessment (BA; Lorenzen, 2003; see Appendix D). The BA is a 25-item measure designed to assess three components of body esteem: physical attractiveness, physical conditioning, and upper body strength. Participants are asked to report the degree of satisfaction they have with different aspects of the body (i.e., biceps, weight, muscularity). These items are answered on a 5-point, Likert-type scale ranging from 1 (strongly negative) to 5 (strongly positive). The BA is scored by summing the responses of all 25 items and dividing by 25. The BA has good internal consistency with a Cronbach’s alpha of .95. An exploratory factor analysis indicated that the BA was composed of three factors, which matched with the three components of body esteem: physical attractiveness, physical conditioning, and upper body strength (F. Grieve, personal communication, July 3, 2003).

Negative Affect. Affect was assessed using the Positive and Negative Affect Schedule (PANAS; Watson & Clark, 1988; see Appendix E). The PANAS consists of two, 10-item mood scales, one for positive affect (PA) and one for negative affect (NA). Participants are asked to rate the extent to which they have experienced each mood state during a specified time period. The items are rated on a 5-point, Likert-type scale ranging from 1 (very slightly or not at all) to 5 (very much). The PANAS is scored by summing both sets of responses. The PANAS has good internal consistency with a Cronbach’s alpha ranging from .84 to .87 for negative affect, and .86 to .90 for positive affect. The PANAS also has good scale validity with convergent correlations between PA and NA scales ranging from .89 to .95.
Procedure

Participants first signed the informed consent document (see Appendix F). They then completed the demographics survey, PANAS, DI, MPS, and BA. Participants always completed the demographics survey first and PANAS second. This order was followed to assess mood states at the beginning of the procedure. Participants completed the remaining questionnaires in a random order to control for order effects. Upon completion, all participants received a debriefing statement. The entire procedure took 15-20 minutes. Some participants received extra credit, upon the discretion of their professor.
Results

Internal consistencies were completed for each of the factors for each measure administered. Reliability scores for the six factors of the MPS were as follows: concern over mistakes (Cronbach’s alpha = .89), personal standards (Cronbach’s alpha = .82), parental expectations (Cronbach’s alpha = .78), parental criticism (Cronbach’s alpha = .73), doubts about actions (Cronbach’s alpha = .75), and organization (Cronbach’s alpha = .94). Reliability scores for the three factors of the BA were physical condition (Cronbach’s alpha = .86), physical attractiveness (Cronbach’s alpha = .86), and upper body strength (Cronbach’s alpha = .83). Only the negative mood scale of the PANAS was used (Cronbach’s alpha = .59).

A factor analysis performed on the DI indicated that all six questions used to assess symptoms of muscle dysmorphia loaded onto a single factor. This factor, called muscle dysmorphia symptomology, yielded a Cronbach’s alpha of .81. The mean and standard deviation for each of the factors are included in Table 1.
Table 1:

_**Descriptive Statistics of Respondents Across Measures of Muscle Dysmorphia Symptomology, Negative Affect, Perfectionism, and Body Satisfaction.**_

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Instrument Range</th>
<th>Sample Range</th>
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</thead>
<tbody>
<tr>
<td>MD Symptomology</td>
<td>11.94</td>
<td>5.10</td>
<td>6-30</td>
<td>6-30</td>
</tr>
<tr>
<td>PANAS</td>
<td>Negative Affect</td>
<td>27.85</td>
<td>4.69</td>
<td>10-50</td>
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<tr>
<td>MPS</td>
<td>Concern over Mistakes</td>
<td>29.99</td>
<td>7.04</td>
<td>9-45</td>
</tr>
<tr>
<td></td>
<td>Personal Standards</td>
<td>16.99</td>
<td>4.88</td>
<td>7-35</td>
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<td>Parental Expectations</td>
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<td>3.99</td>
<td>5-25</td>
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<td>Parental Criticism</td>
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<td>Doubts About Actions</td>
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<td>Physical Attractiveness</td>
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<td></td>
<td>Upper Body Strength</td>
<td>3.55</td>
<td>.785</td>
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1 N = 138
2 DI = Dysmorphia Inventory
3 MD = muscle dysmorphia
4 PANAS = Positive and Negative Affect Scale
5 MPS = Multidimensional Personality Scale
6 BA = Body Assessment
A stepwise regression was performed to determine which factors contributed the most to muscle dysmorphia symptomology. All factors were included in the analysis. As shown in Table 2, the results yielded two steps and two factors that contributed significantly to muscle dysmorphia symptomology. The factors that contributed to muscle dysmorphia symptomology were concern over mistakes (a negative relationship) and satisfaction with upper body strength (a positive relationship).

Table 2:

Results of Stepwise Regression

<table>
<thead>
<tr>
<th>Step 1: Included</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concern Over Mistakes</td>
<td>-.338</td>
<td>.055</td>
<td>-.467**</td>
<td>.218**</td>
</tr>
</tbody>
</table>

Step 1: Excluded

| Negative Emotions                   | .045 |
| Personal Standards                  | -.135|
| Parental Expectations               | -.097|
| Parental Criticism                  | .002 |
| Doubts About Actions                | -.050|
| Organization                         | -.073|
| Physical Condition                  | .201 |
| Physical Attractiveness              | .172 |
| Upper Body Strength                 | .306 |

**p<.001 *p<.010
Table 2 (cont.):

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 2: Included</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concern Over Mistakes</td>
<td>-.335</td>
<td>.052</td>
<td>-.463**</td>
<td>.218**</td>
</tr>
<tr>
<td>Upper Body Strength</td>
<td>1.987</td>
<td>.464</td>
<td>.306</td>
<td>.094*</td>
</tr>
<tr>
<td><strong>Step 2: Excluded</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative Emotions</td>
<td>-.073</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Standards</td>
<td>-.095</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental Expectations</td>
<td>-.100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parental Criticism</td>
<td>-.035</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doubts About Actions</td>
<td>-.099</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organization</td>
<td>-.029</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Condition</td>
<td>.050</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Attractiveness</td>
<td>-.068</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** p<.001  * p<.010
Discussion

The purpose of this study was to determine the contributions of perfectionism, body satisfaction, and negative affect to muscle dysmorphia symptomology. The hypothesis under study was that higher degrees of perfectionism, lower levels of body satisfaction, and higher degrees of negative affect would be indicative of individuals with more symptoms of muscle dysmorphia.

The current study did not support that higher degrees of negative affect were found in individuals with muscle dysmorphia symptomology. Research has shown that negative affect plays a role in the development of eating disorders (McCabe & Ricciardelli, 2003). The indication is that, for men, negative affect may not be correlated with symptoms of muscle dysmorphia. The reason could be due to the fact that, unlike women, men tend to externalize their behaviors. Because women are more aware of their emotions when compared to men, it may be that men find other ways to cope when they are experiencing negative emotions. Also, the individuals in this study were relatively low in muscle dysmorphia symptomology, indicating that they were healthy individuals who did not lift weights in excess.

It was found that one factor on the perfectionism scale, concern over mistakes, contributed inversely to muscle dysmorphia symptomology (p < .001, -.463). An individual who scored high on the concern for mistakes factor was likely to score low in muscle dysmorphia symptomology. The implication is that individuals who are concerned with making mistakes are less likely to engage in behaviors that may be hazardous to them (i.e., steroid use, working out in excess). Due to the fact that they are
apprehensive in engaging in these behaviors, they would be less likely to fit the criterion for muscle dysmorphia. This finding is contrary to the research that has been performed with women. Research has shown that those women with higher degrees of perfectionism have an increase of eating disorder symptomology (Vohs, et al., 2001).

It was found that one factor on the body satisfaction scale, upper body strength, contributed significantly to muscle dysmorphia symptomology (p < .01, .306). As body satisfaction in the area of upper body strength increases, symptoms of muscle dysmorphia also increase. This result is contrary to expectations. One explanation for this finding would be a curvilinear relationship, indicating that the participants in this study may be in the lower half of the range of the scale. It is expected that at some point body satisfaction will begin to decrease as symptoms of muscle dysmorphia increase.

As regards the model proposed by Grieve (2003), the current study yielded results that partially support the model. Consistent with Grieve’s model, current findings suggest that the factors of perfectionism and body satisfaction contribute to muscle dysmorphia symptomology. No results were obtained to indicate that negative affect contributes to body satisfaction or muscle dysmorphia symptomology, which is a component of Grieve’s model. Thus, while the model cannot be wholly supported, it cannot be entirely rejected, either.

The study did find that some factors contributed highly to muscle dysmorphia symptomology, though they did not contribute significantly. These factors included personal standards from the MPS and physical attractiveness from the BA. Individuals diagnosed with muscle dysmorphia are concerned with body appearance and set very
high standards to meet their ideal appearance. Future studies may want to focus on these factors to help determine the role that each plays in muscle dysmorphia symptomology, especially with a population with high muscle dysmorphia symptomology.

Research reviewed has shown that women without eating disorders often possess subclinical levels of eating disorders (i.e., wanting to lose 5-10 lbs., dissatisfied with body image) (Brownell, & Rodin, 1994). The men in this study did not show any subclinical levels of muscle dysmorphia, thus indicating that men do not possess subclinical levels of muscle dysmorphia. Also, it may imply that many men work out to improve health or maintain body shape rather than to change body shape.

The current study has several limitations. The population used for this study consisted of a young, college educated group. These participants were very low on muscle dysmorphia symptomology. The results obtained may have been different if the population used were individuals who are more likely to meet the criterion for muscle dysmorphia (i.e., body builders as opposed to college students).

A second implication includes the use of self-report measures. When using self-report data, the participants may answer randomly or answer in a way that they feel is socially desirable (Schwarz, 1999). A third limitation is the measure used to assess symptoms of muscle dysmorphia. Because no other questions from the DI loaded on the questions added to assess muscle dysmorphia, only six questions were used to assess symptomology. However, it is also important to note that, to date, no scale has been developed to assess this disorder. Future studies may want to focus on the development of a measure to assess muscle dysmorphia. The six questions used for this study could be
expanded to be more specific, and questions regarding concern over mistakes and satisfaction with upper body strength may also be added to assess this disorder. Items referring to personal standards and physical attractiveness may also need to be explored.

The current study yielded two factors that significantly contributed to symptoms of muscle dysmorphia. These factors, concern over mistakes and upper body strength, contributed to 31% of the variance of muscle dysmorphia symptomology, thus giving a new insight as to some of the possible contributing factors of this disorder. These findings will allow for the possible development of a scale used to assess muscle dysmorphia, and will also help to further reveal a disorder that may become as prevalent in men as eating disorders have in women.
References


Grieve, F. G. (2003). *Proposing a model for the etiology of muscle dysmorphia.* Unpublished manuscript, Western Kentucky University, Bowling Green, KY.


Predicting the onset of anorexia nervosa and bulimia nervosa (2002, November/December). *Eating Disorders Review, 3*.


Appendix A

Demographics Survey
Please answer the following questions in an honest manner. **DO NOT** include your name or any other identifying information.

Age: ______________

Ethnicity: ______________

Education Level: ______________

Marital Status: ______________
Appendix B

Dysmorphia Inventory (DI)
Please complete the following information. **Weight:** __________  **Height:** __________

Please read each of the following statements and indicate how strongly you feel about your looks within the last month. To answer each question circle the number that best describes your feelings and beliefs about your appearance.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>Very Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I place a great deal of importance on my looks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. I am self-conscious about my appearance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. It is unreasonable to think badly about my looks, but I cannot stop it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I have been told I am good looking.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. I am timid.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. I feel depressed about how I look.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I wear clothes or anything that can hide what I do not like of my appearance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. I worry about how I look to others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. If a part of my body does not look right, I try to hide it.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I think that I am ugly.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I have felt that it is not fair that I do not look as good as others.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. I am healthy, but I feel unattractive.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. I am good-looking.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. I spend much time grooming myself to change the way I look.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. I have avoided going to parties because of the way I felt I looked.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. I feel ashamed of my appearance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. I have been admired by others about my looks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>18. I can succeed in hiding or concealing the defects I think I have.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>19. I buy products that promise to give me a better look or appearance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>20. I spend much time looking at myself in the mirror.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>21. I am too critical of myself.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>22. I cannot handle the way I feel about my appearance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>23. Some people have criticized my looks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>24. I have gone to a dermatologist for skin problems.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>25. I am popular.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>26. I worry and lose sleep about the impression I will make when people see me.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>27. I check constantly about my looks.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>28. Thinking about my appearance makes me anxious.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
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<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>29. Thinking about my looks interferes with my ability to concentrate.</td>
<td>Never</td>
<td>Some-Times</td>
<td>Often</td>
<td>Very Often</td>
<td>Always</td>
</tr>
<tr>
<td>30. An unattractive appearance causes unhappiness and social failure.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>31. I lift weights to enhance my appearance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>32. I have given up other activities to spend more time lifting weights.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>33. I think of myself as being small.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>34. I spend 30 minutes or more a day thinking about lifting weights.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>35. I avoid social situations because of these thoughts.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>36. I use nutritional supplements or drugs to enhance my appearance.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix C

Multidimensional Perfectionism Scale (MPS)
Please circle how much you agree with each statement.

1. My parents set very high standards for me.
   1 Strongly Agree  2 Agree  3 Neutral  4 Disagree  5 Strongly Disagree

2. Organization is very important to me.
   1 Strongly Agree  2 Agree  3 Neutral  4 Disagree  5 Strongly Disagree

3. As a child, I was punished for doing things less than perfect.
   1 Strongly Agree  2 Agree  3 Neutral  4 Disagree  5 Strongly Disagree

4. If I do not set the highest standards for myself, I am likely to end up a second-rate person.
   1 Strongly Agree  2 Agree  3 Neutral  4 Disagree  5 Strongly Disagree

5. My parents never tried to understand my mistakes.
   1 Strongly Agree  2 Agree  3 Neutral  4 Disagree  5 Strongly Disagree

6. It is important to me that I be thoroughly competent in everything I do.
   1 Strongly Agree  2 Agree  3 Neutral  4 Disagree  5 Strongly Disagree

7. I am a neat person.
   1 Strongly Agree  2 Agree  3 Neutral  4 Disagree  5 Strongly Disagree

8. I try to be an organized person.
   1 Strongly Agree  2 Agree  3 Neutral  4 Disagree  5 Strongly Disagree

9. If I fail at work/school, I am a failure as a person.
   1 Strongly Agree  2 Agree  3 Neutral  4 Disagree  5 Strongly Disagree

10. I should be upset if I make a mistake.
    1 Strongly Agree  2 Agree  3 Neutral  4 Disagree  5 Strongly Disagree
11. My parents wanted me to be the best at everything.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

12. I set higher goals than most people.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

13. If someone does a task at work/school better than I, then I feel like I failed the whole task.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

14. If I fail partly, it is as bad as being a complete failure.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

15. Only outstanding performance is good enough in my family.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

16. I am very good at focusing my efforts to obtain a goal.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

17. Even when I do something very carefully, I often feel that it is not quite right.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

18. I hate being less than the best at things.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

19. I have extremely high goals.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

20. My parents have expected excellence from me.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

21. People will probably think less of me if I make a mistake.

Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree
22. I never felt like I could meet my parents' expectations.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

23. If I do not do as well as other people, it means I am an inferior human being.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

24. Other people seem to accept lower standards from themselves than I do.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

25. If I do not do well all the time, people will not respect me.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

26. My parents have always had higher expectations for my future than I have.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

27. I try to be a neat person.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

28. I usually have doubts about the simple everyday things that I do.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

29. Neatness is very important to me.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

30. I expect higher performance in my daily tasks than most people.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

31. I am an organized person.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

32. I tend to get behind in my work because I repeat things over and over.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Neutral</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>
33. It takes me a long time to do something Aright.

1 2 3 4 5
Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

34. The fewer mistakes I make, the more people will like me.

1 2 3 4 5
Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree

35. I never felt like I could meet my parents’ standards.

1 2 3 4 5
Strongly Agree  Agree  Neutral  Disagree  Strongly Disagree
Appendix D

Body Assessment (BA)
The following are some areas in which people tend to be concerned about their bodies. Please rate how you feel about the areas of your body (negatively versus positively).

<table>
<thead>
<tr>
<th>Area</th>
<th>Rating 1</th>
<th>Rating 2</th>
<th>Rating 3</th>
<th>Rating 4</th>
<th>Rating 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Face</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Body Shape</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Thighs</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Upper Body Strength</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Waist</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Reflexes</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Health</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Shoulders</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Physical Stamina</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Agility</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Biceps</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Lower Body Strength</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Chest</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Chin</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Energy Level</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Body Build</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Physical Coordination</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Buttocks</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Calves</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Stomach</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Physical Condition</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Triceps</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Abdominal Muscles</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
<tr>
<td>Legs</td>
<td>1 strongly negative</td>
<td>2 neutral</td>
<td>3 neutral</td>
<td>4 strongly positive</td>
<td>5 strongly positive</td>
</tr>
</tbody>
</table>
Appendix E

The Positive and Negative Affect Scale (PANAS)
This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way during the last few weeks. Use the following scale to record your answers.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>very slightly</td>
<td>a little</td>
<td>moderately</td>
<td>quite a bit</td>
<td>extremely</td>
</tr>
<tr>
<td>or not at all</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- ___ interested
- ___ distressed
- ___ excited
- ___ upset
- ___ strong
- ___ guilty
- ___ scared
- ___ hostile
- ___ enthusiastic
- ___ proud

- ___ irritable
- ___ alert
- ___ ashamed
- ___ inspired
- ___ nervous
- ___ determined
- ___ attentive
- ___ jittery
- ___ active
- ___ afraid
Appendix F

Informed Consent Document
Informed Consent Document

Men and Body Image

You are being asked to participate in a study looking at different opinions men may have about their bodies. Please read the following material carefully. It describes the purpose of the study, the procedure to be used, risks and benefits of your participation, and what will happen to the information that is collected from you. This study is being conducted through Western Kentucky University. The University requires that you give your signed agreement to participate in this study.

The investigator will explain to you in detail the purpose of the study, the procedures to be used, and the potential benefits and risks of participation. You may ask him/her any questions you have to help you understand and discuss with the researcher any questions you may have.

If you then decide to participate in the study, please sign on the next page of this form in the presence of the person who explained the study to you. You should be given a copy of this form to keep.

1. Nature and Purpose of the Project: This study is looking at different factors that may contribute to men’s body image. The data collected in this study will be used as part of the master’s thesis of a psychology graduate student.

2. Explanation of Procedures: Your participation in this study will require you to complete five brief questionnaires. The first is a demographics survey. You will also be asked to complete a Body Opinion Survey, a 30-item measure used that assesses how you feel about your body. You will also be asked to complete the Multidimensional Perfectionism Scale, a 35-item measure used to assess characteristics of perfectionism. You will be asked to complete the Body Assessment, a 25-item measure used to assess components of body esteem. You will be asked to complete the Positive and Negative Affect Scale, consisting of two 10-item mood scales used to determine degrees of positive and negative moods. It should take approximately 15-20 minutes to complete all materials.

3. Discomfort and Risks: The risks to participation appear to be small. There is always a small chance that any question could bring about problems. Please let the researcher know if a question has bothered you.

4. Benefits: You may be able to receive extra credit for your psychology course, if your instructor offers such credit (be sure to check with your instructor). It is the responsibility of the instructor to offer alternate opportunities to receive extra credit for those individuals who are unable to participate or chose not to participate.
5. **Confidentiality:** Your identity will be completely anonymous. There will be no way for researchers to know who completed which questionnaires. The data collected from you will be combined with data collected from other people. The data gathered will be used to answer the research hypotheses of this study.

6. **Refusal/Withdrawal:** Refusing to be in this study will have no effect on any future services you may receive from Western Kentucky University. Anyone who agrees to participate in this study is free to quit at any time with no penalty.

7. **Questions:** If you have any questions about the study, please ask them at this point. If you think of questions later on, direct them to Crystal Henson at (270) 745-2695 or Rick Grieve, Ph.D., at (270) 745-4417, Monday-Friday from 9:00 am until 4:30 pm.

_You understand also that it is impossible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks._

---

**Signature of Participant** ____________________________ **Date** ____________________

**Signature of Witness** ______________________________ **Date** ____________________

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY THE WESTERN KENTUCKY UNIVERSITY HUMAN SUBJECTS REVIEW BOARD

Dr. Phillip E. Myers, Human Protections Administrator

TELEPHONE: (270) 745-4652

e-mail: phillip.myers@wku.edu
Appendix G

Debriefing Statement
Debriefing Statement

Thank you for participating in this research study. Previous research has shown that men are becoming more preoccupied with increasing the amount of muscle mass they have. This preoccupation has lead to a new disorder known as muscle dysmorphia. Individuals who meet the criteria for this disorder are very muscular, but view themselves as small and weak. These individuals go to incredible lengths to obtain this muscle mass, including excessive weight lifting and exercise, special diets, and the use of nutritional supplements or drugs. Individuals with muscle dysmorphia seem to share many of the characteristics seen in girls and women with eating disorders. We are interested in the possible contributing factors of muscle dysmorphia. It was predicted that, individuals with more symptoms of muscle dysmorphia will show more characteristics of perfectionism, be less satisfied with different aspects of their body, and have a higher degree of negative affect. If you feel that you may be affected by muscle dysmorphia, and you would like more information, please contact Dr. Rick Grieve at the Department of Psychology. If you have any questions regarding the research or if you would like a final copy of the research project, please contact Crystal Henson or Dr. Rick Grieve at (270) 745-4417 or at the Department of Psychology, Western Kentucky University, 1 Big Red Way, Bowling Green, KY 42101. The final copies will not be available until after January 1, 2004.
Appendix H

Human Subjects Review Board Approval
Crystal Henson  
1267 Cabell Drive  
Bowling Green, KY 42104

Dear Crystal:

Your research project, “Potential Antecedents of Muscle Dysmorphia,” was reviewed by the HSRB and it has been determined that risks to subjects are: (1) minimized and reasonable; and that (2) research procedures are consistent with a sound research design and do not expose the subjects to unnecessary risk. Reviewers determined that: (1) benefits to subjects are considered along with the importance of the topic and that outcomes are reasonable; (2) selection of subjects is equitable; and (3) the purposes of the research and the research setting is amenable to subjects’ welfare and producing desired outcomes; that indications of coercion or prejudice are absent, and that participation is clearly voluntary.

1. In addition, the IRB found that: (1) signed informed consent will be obtained from all subjects. (2) Provision is made for collecting, using and storing data in a manner that protects the safety and privacy of the subjects and the confidentiality of the data. (3) Appropriate safeguards are included to protect the rights and welfare of the subjects.

   a. Your research therefore meets the criteria of Expedited Review and is Approved.

2. Please note that the institution is not responsible for any actions regarding this protocol before approval. If you expand the project at a later date to use other instruments please re-apply. Copies of your request for human subjects review, your application, and this approval, are maintained in the Office of Sponsored Programs at the above address. Please report any changes to this approved protocol to this office. A Continuing Review protocol will be sent to you in the future to determine the status of the project.

Sincerely,

Phillip E. Myers, Ph.D.  
Director, OSP and  
Human Protections Administrator

cc: Human Subjects File HS04-010  
cc: Dr. Rick Grieve