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EXAMINING THE RELATIONSHIP BETWEEN BODY WORK AND MUSCLE DYSMORPHIA SYMPTOMS

A Thesis
Presented to
The Faculty of the Department of Psychology
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts

By
Katharine J. Reynolds
August 2010

EXAMINING THE RELATIONSHIP BETWEEN BODY WORK AND MUSCLE DYSMORPHIA SYMPTOMS

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TABLE OF CONTENTS

Table of Contents…….....i

List of Tables…….....ii

Abstract…….....iii

Introduction …….....3

Etiology of Muscle Dysmorphia……..6

Socioenvironmental Factors……..……...7

Emotional Factors…….…….…..9

Psychological Factors ……..…..10

Physiological Factors……..……..……..14

Focus of Present Study: Body Work…….….15

Limitations of the Current Research and Present Study……....18

Methods……..……....19

Measures……..……20

Procedure……21

Results…….22

Discussion……..……..…24

References……...…27

Appendix A…….33

Appendix B…….…....35

Appendix C…….38

Appendix D…….42

Appendix E…….…....44

LIST OF TABLES

TABLE

1 Contributing Factors in the Development of Muscle Dysmorphia.....7

2 Regression Analysis Results Examining Specific Factors as a Predictor of ABQ Scores……...23

EXAMINING THE RELATIONSHIP BETWEEN BODY WORK AND MUSCLE DYSMORPHIA SYMPTOMS

Katharine Reynolds August 2010 Pages 45

Directed by: Dr. Rick Grieve, Dr. Andrew Mienaltowski, and Dr. Sarah Ostrowski

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The purpose of this study was to investigate whether men with a large amount of Muscle Dysmorphia symptoms had a more favorable outlook and opinion of body work. Participants in the current study were a convenience sample of men recruited from undergraduate classes at Western Kentucky University and the community of Bowling Green Kentucky and Somerset Kentucky. A total of 215 men completed the study. Participants completed the Muscle Dysmorphia Inventory (MDI) and the Attitude-Behavior Questionnaire (ABQ). Results indicate scores on the MDI were significant predictors of scores on the ABQ. This suggests that men with a high number of Muscle Dysmorphia symptoms have a more favorable outlook and opinion of body work.

Introduction

Body Dysmorphic Disorder (BDD) is characterized by an impairing preoccupation with either real or imagined deficits 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). The fixation with the real or imagined body deficit leads individuals with this disorder to isolate themselves from the public, as they see themselves as too deformed or unsightly to be in the presence of others. The prevalence of BDD in the general population is unknown; however, it is generally believed that in outpatient settings the disorder is equally common among both genders. The *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR) reports that individuals suffering from BDD are frequently concerned with body parts associated with the head and face, specifically their hair, nose, and teeth (APA, 2000). A study of 95 men diagnosed with BDD concluded that the majority of men were preoccupied with thoughts concerning their hair, facial features, skin, and penis size (Phillips & Diaz, 1997). Over the past 20 years, researchers and clinicians have noted a subset of the population that has become increasingly preoccupied with achieving a body type that is lean and muscular. This preoccupation has led to the development of the diagnostic criteria for Muscle Dysmorphia.

Muscle Dysmorphia

Muscle Dysmorphia has been classified as a subtype of BDD (Pope, Gruber, Choi, Olivardia, & Phillips, 1997), where the focus of the preoccupation stems from muscle tone and build. Before Muscle Dysmorphia was coined as such, Pope, Katz, and Hudson (1993) referred to the disorder as "*reverse anorexia nervosa*" due to its similarities to

certain components of anorexia nervosa. Similarities between individuals with these disorders include preoccupation with appearance, high levels of anxiety and distress associated with these preoccupations, a desire to hide their bodies under baggy clothing, and participation in compulsive behaviors aimed at achieving the ideal body (Grieve, 2007; Maida & Armstrong, 2005). One fundamental difference between the two disorders is that individuals suffering from anorexia nervosa view their emaciated bodies as too large, whereas individuals suffering from Muscle Dysmorphia perceive their muscular bodies as too small (Grieve, 2007; Maida & Armstrong, 2005). Another difference that should be noted is that individuals suffering from Muscle Dysmorphia engage in behaviors that are conducive to increasing musculature, such as excessive exercise with restrictive eating, as a secondary characteristic, whereas individuals suffering from anorexia nervosa engage in pathological eating behaviors with excessive exercise as a secondary characteristic to achieve a goal of decreasing body fat (Olivardia, 2001).

Pope et al. (1993) suggested that *reverse anorexia nervosa* should be relabeled Muscle Dysmorphia. This recommendation stemmed from three studies that examined the use of anabolic steroids in weight lifters. These studies were not originally conducted with Muscle Dysmorphia in mind, but the researchers found overwhelming evidence of obsession with muscularity as a predominant theme. Pope et al. (1997) defined Muscle Dysmorphia "as a chronic preoccupation that one is insufficiently muscular" (p. 550). Even though both men and women can both suffer from this disorder, it is predominantly seen in men, with a mean age of onset of 19.4 years (Olivardia, 2001).

Previously, body image issues were thought to be only present in women. An increasing number of men are becoming obsessed with body image (Grieve, 2007), albeit in ways that are different than the obsession seen in women. Women are preoccupied with becoming thin, whereas men become fearful that they are too small, skinny, or weak (Olivardia, 2001). Women are concerned with decreasing body fat. Men are similar in this regard, but they are also striving to achieve more muscle definition (Cafri & Thompson, 2004). It should be noted that there is nothing wrong with striving to be healthy, fit, and muscular. However, a clinical phenomenon exists on the severe end of the continuum where the preoccupation with body image becomes unhealthy and pathological (Thompson & Cafri, 2007).

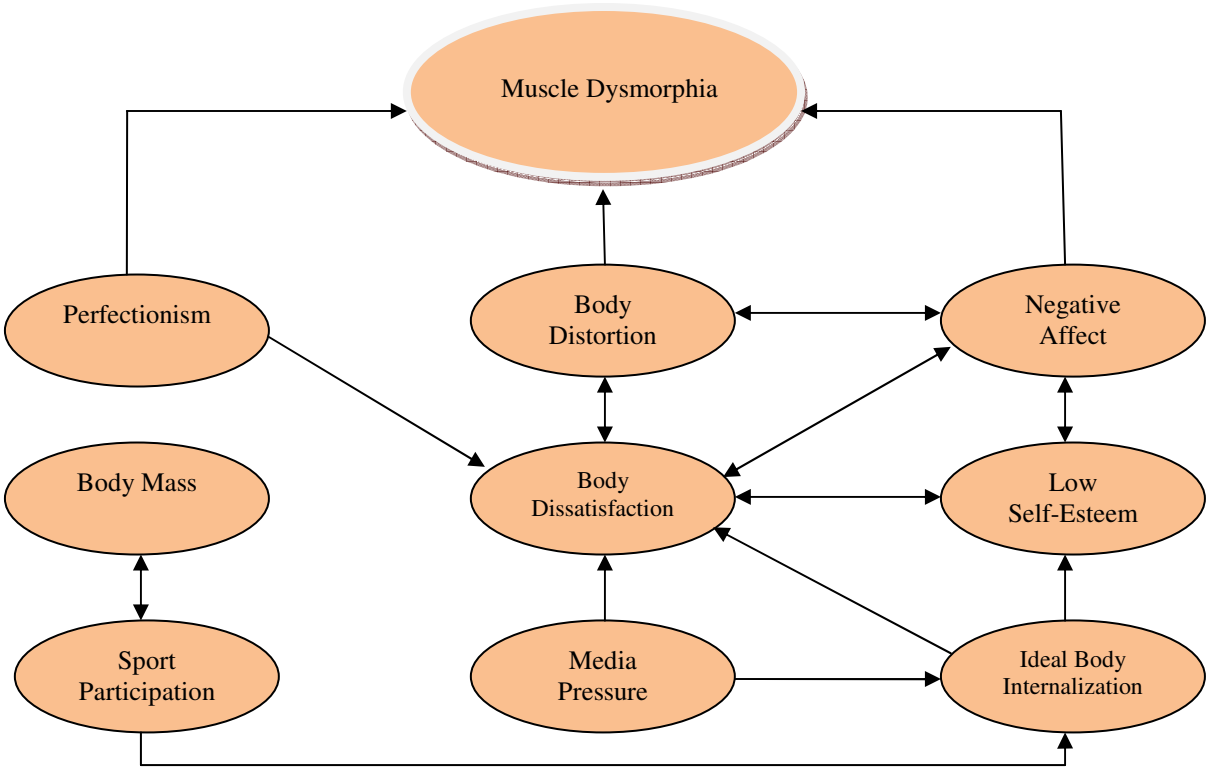
The following diagnostic criteria of Muscle Dysmorphia were outlined by Olivardia (2001). First, the individual must have a preoccupation with the idea that his or her body is insufficiently muscular and lean. This preoccupation leads to behaviors aimed at gaining muscle mass, such as spending hours in the gym concentrating on building muscle tone and paying strict attention to nutritional intake. Second, two of the following criteria must be present. The individual frequently forfeits important social, occupational, and/or recreational activities because of the compulsive need to facilitate his or her intense workout schedule or diet schedule. Additionally, the individual actively avoids situations in which his or her body is exposed to others. If the avoidance of these situations is not possible, the individual will endure the exposure of his or her body with significant distress and anxiety. The preoccupation with the inadequacy of body size or muscularity causes clinically significant distress or impairment in social, occupational, or other important areas of functioning. Finally, the individual continues to spend hours

devoted to working out, scrutinizing his or her diet, or will use performance enhancing steroids despite having been informed of the possible negative physical and psychological consequences. The third criterion states that the primary focus of the preoccupation and behavior is on possessing inadequate muscle mass and being too small (Olivardia, 2001).

Etiology of Muscle Dysmorphia

Limited research exists concerning the factors that contribute to the onset of Muscle Dysmorphia. Grieve (2007) proposed a conceptual model of factors contributing to the formation of Muscle Dysmorphia. As shown in figure 1, the four different types of variables discussed in the model include the following: socioenvironmental factors (media influences, sport participation), emotional factors (negative affect), psychological factors (body dissatisfaction, ideal body internalization, self-esteem, body distortion, perfectionism), and physiological factors (body mass).

Figure 1. Contributing factors in the development of Muscle Dysmorphia



From: Grieve, F. G. (2007). A conceptual model of factors contributing to the development of Muscle Dysmorphia. Adapted from *Eating Disorders*,15, 63-80.

Socioenvironmental Factors: Media Influences and Sports Participation

Media stereotypes play a central role in creating and exacerbating body dissatisfaction (Ogden & Mundray, 1996). Ogden and Mundray completed a study that examined the role of the media in influencing body image in both men and women. Participants consisting of 20 men and 20 women looked at images of stereotypically attractive individuals and overweight individuals that matched their gender. The results showed that both men and women felt less satisfied with their bodies after viewing the attractive individuals. This implies that men, in addition to women, are susceptible to media images of cultural standards.

Media sources display the ideal male body as being one of muscularity. Muscularity is often portrayed as a symbol of power and success (Grossbard, Lee, Neighbors, & Larimer, 2009). Research has revealed that over the past several decades, the ideal male figure has become increasingly more muscular. Action toys, such as the G.I. Joe action figure have become more muscular and unrealistic in size (Pope, Olivardia, Gruber, & Borowiecki, 1999). Moreover, Leit, Gray, and Pope (2001) believe that *Playgirl* centerfold models have become more muscular. After men were exposed to muscular male figures such as those found in *Playgirl*, they report a significant decrease in body dissatisfaction (Leit et al., 2001; Baird & Grieve, 2005; Lorenzen, Grieve, & Thomas, 2004). As men are bombarded with muscularity as the ideal body type in the media, they often begin to internalize the message of muscularity.

Studies suggest that athletes are at a greater risk than non-athletes for the development of an eating disorder (Baum, 2006). A plethora of research has been conducted concerning female athletes and the prevalence of eating disorders within this population (Greenleaf, Petrie, Carter, & Reel, 2009; Thompson, 2007), whereas limited research exists concerning male athletes. The sports that are associated with a higher risk for the development of eating disorders are those in which low body fat aids performance, aesthetics are necessary for judging, and those in which the athletes have to make weight to be eligible of competition (Baum,2006). Examples of these sports include: diving, body-building, wrestling, martial arts, and rowing. Several risk factors exist in the athletic environment, such as the drive for perfectionism, need for high achievement, and pressure from peers and coaches to perform (Sanford-Martens, Davidson, Yakushko, Martens, & Hinton, 2005). A study of male athletes consisting of rowers and wrestlers

found an increase in the prevalence of binging and subclinical eating disorders (Baum, 2006). The motivation for developing the eating disorder stems from not only performance enhancement, but also the need to boost self-esteem and sexual attractiveness (Baum, 2006). Athletes such as football players depend on muscularity to increase their performance and power. Anabolic steroid use has been a popular medium for male athletes to use to increase muscle size and body sculpt (Baum, 2006). Such anabolic steroid use can be a symptom of Muscle Dysmorphia. Grieve (2007) states in his conceptual model that sports participation influences body mass and ideal body internalization. It is important to note that sport participation is a risk factor for the onset of Muscle Dysmorphia, but does not lead to Muscle Dysmorphia for all athletes.

Emotional Factors: Negative Affect

Negative affect is a factor in Grieve's etiological model because it serves as the motivational apparatus that produces the behavioral symptoms of Muscle Dysmorphia (Grieve, 2007). Negative affect is manifested by low self-esteem, body dissatisfaction, and body distortion and is displayed by depression and anxiety (Chandler, 2007). By the same token, these feelings and emotions also influence low self-esteem, body distortion, and symptoms of Muscle Dysmorphia (Grieve, 2007). Negative affect is the method through which body dissatisfaction expresses its influence on the symptoms of Muscle Dysmorphia (Grieve, 2007).

Research has shown that there is a correlation between negative affect and the drive to increase muscle mass among adolescent boys (McCabe & Ricciardelli, 2004). Men displaying Muscle Dysmorphia symptoms strive to increase muscle mass; therefore, if this finding could be generalized to men, negative affect could be one of the root

causes of the drive for muscularity. Research has found that negative affect influences self-criticism, in that it was contingent on perceived goal processes (Powers, Koestner, Lacaille, Kwan, & Zuroff, 2009). Individuals who develop Muscle Dysmorphia set unrealistic goals for themselves, especially in regard to weight lifting, body appearance, and dieting. When these individuals fail to reach goals, negative affect becomes more prominent.

Psychological Factors: Body Dissatisfaction, Ideal Body Internalization, Self-Esteem, Body Distortion, and Perfectionism.

Body dissatisfaction is one of the most prominent factors in Grieve's (2007) model. He speculates that most variables influence body dissatisfaction, which then influences the onset of Muscle Dysmorphia. Research estimates that 95% of college men report being dissatisfied with some aspect of their body (Davey & Bishop, 2006; Grieve, Wann, Henson & Ford, 2006; Labre, 2002). Research has found negative consequences of body dissatisfaction in college men and women. Low self-esteem, negative affect, development of eating disorders, and unhealthy body change techniques have been found to be the result of high levels of body dissatisfaction (Mintz & Betz, 1988; Grieve, Wann, Henson, & Ford).

Men's attitudes about their muscularity, leanness, and height influence their level of body dissatisfaction (Ridgeway & Tylka, 2005). As height is an attribute that cannot be changed, men with body dissatisfaction often focus on altering their level of muscularity and leanness. An unhealthy devotion to becoming more muscular and lean can lead to unhealthy behaviors such as taking anabolic steroids and spending an inordinate amount of time weight lifting, which are symptomatic of Muscle Dysmorphia.

Studies reveal that concerns about weight and muscularity are present when men experience body dissatisfaction, which makes it more complex than female body dissatisfaction (Bergstrom & Neighbors, 2006). Men who are trying to increase their level of muscularity are much more likely to turn to anabolic steroids, high protein diets, and dietary supplement use (McCabe & Ricciardelli, 2004). Another avenue these men may take to increase their muscle mass is excessive weight lifting. As previously stated, exorbitant time spent trying to increase muscularity is a symptom of Muscle Dysmorphia. Thompson & Stice (2001) have found that internalization is a causal risk factor for the development and continuation of eating and body shape disturbances. Thompson and Stice define internalization as "the extent to which an individual cognitively buys into societal norms of size and appearance, to the point of modifying one's behavior in an attempt to approximate these standards" (p.181). The cultural norm that men desire to emulate is a mesomorphic body shape (Grieve, 2007). If men subscribe to, and internalize society's view of the ideal male body, they will strive to achieve the same body shape. This dedication to acquiring the ideal male body shape can lead to unhealthy behaviors. Grieve (2007) hypothesizes that the likelihood of developing Muscle Dysmorphia increases once internalization of the ideal male body has occurred. Grieve's (2007) model proposes that body internalization has an impact on body dissatisfaction and low self-esteem. Body dissatisfaction will increase as body internalization grows stronger, whereas an individual's self-esteem will decrease as body internalization becomes more salient.

Low self-esteem is a factor in Grieve's (2007) conceptual model that can contribute to the development of Muscle Dysmorphia. If an individual's self-esteem is

based on his or her appearance, he or she will spend a larger amount of time on activities that are related to appearance, such as weight lifting (Crocker, 2002). Researchers have found a relationship between body attitudes and self-esteem. As perceptions of body and self become more positive, self-esteem rises in both men and women (Grieve, 2007; Mintz & Betz, 1986). Intuitively, one could presume that, as self-esteem decreases, an individual will turn to outlets such as weight-lifting to increase his or her self-esteem. For this reason, low self-esteem can lead to the development of Muscle Dysmorphia.

Contingent self-esteem should be considered when discussing Muscle Dysmorphia. Contingent self-esteem encompasses the degree to which one's positive self-image is contingent upon social approval, meeting external expectations, or other perceived criteria, including appearance (Crocker & Wolfe, 2001). Grossbard et al. (2009) found that a higher level of contingent self-esteem in men was associated with a greater aspiration for muscularity. Just as ideal-body internalization and media are two factors associated with the etiology of Muscle Dysmorphia, they are two factors that could also influence contingent self-esteem.

Body distortion is a critical component of eating disorders. Women with anorexia nervosa overestimate their physical appearance (APA, 2000), whereas men with Muscle Dysmorphia underestimate their actual body size (Olivardia, 2001). If men look in the mirror and believe that they are smaller than they actually are, they will strive to achieve larger muscle mass, which in some cases may lead to Muscle Dysmorphia.

Grieve's (2007) model hypothesizes a bi-modal relationship between body distortion and body dissatisfaction. A study conducted by Gardner & Tockerman (1993) found a strong relationship between body dissatisfaction and body distortion. The Color-

A-Person Body Dissatisfaction Test (CAPT; Wooley & Rolls, 1991) was completed by 27 men and 26 women. It was found that with male subjects the relationship between body dissatisfaction and body distortion existed when men commented on specific body regions and individual areas, rather than when they commented on their whole physique (Gardner & Tockerman, 1993). The fixation on certain body regions, such as inadequate chest or back size, may influence men to become preoccupied with weightlifting, dieting, and steroids. This preoccupation could contribute to the development of Muscle Dysmorphia. Body distortion and body dissatisfaction directly influence each other, and the conjunction of the two factors may contribute to Muscle Dysmorphia (Grieve, 2007).

Eating disorders such as Anorexia Nervosa and Bulimia Nervosa are linked closely with perfectionism. Shafran, Cooper, and Fairburn (2002) hypothesize that eating disorders are a direct expression of perfectionism. They state that, under the conditions of eating disorders, "self-evaluation is dependent on the pursuit and attainment of personally demanding standards in the domain of control over eating, shape, and weight" (p. 775). Men who suffer from Muscle Dysmorphia are similar to individuals suffering from eating disorders, in that they, too, are striving to achieve an impossible body type defined by high standards. When taking into consideration the similarities between eating disorders and Muscle Dysmorphia, it is hypothesized that perfectionism plays a dominant role in the formation of Muscle Dysmorphia (Grieve, 2007). Henson (2004) found that the number of Muscle Dysmorphia symptoms correlates with perfectionism. Grieve's (2007) model postulates that perfectionism plays a role-both directly and indirectly-in the formation of Muscle Dysmorphia. The pursuit of the "ideal body" lends itself to the direct influence, whereas the indirect influence can be seen through body dissatisfaction.

Grieve's (2007) model emphasizes ideal body internalization, body dissatisfaction, and body distortion as the three variables that are most important when considering the etiology of Muscle Dysmorphia. The interactions between these three variables provide the backbone for developing the underlying conditions that lead to the development of Muscle Dysmorphia.

Physiological Factors: Body Mass

Grieve (2007) included body mass in his model to serve as a basis of comparison. The *DSM-IV-TR* states that one diagnostic criterion for anorexia nervosa is failure to maintain a healthy and expected body weight (APA, 2000). Similarly, body mass can be used to make a diagnosis of Muscle Dysmorphia (Grieve, 2007). Grieve states that muscular body shape and low body weight are two necessary components for the development of Muscle Dysmorphia.

The most consistent biological correlate of body image concerns in regard to women is the body mass index (BMI) (Grossbard et al., 2009). Studies suggest a relationship between elevated BMI and an increase in body dissatisfaction, as well as weight-loss measures (McCabe & Ricciardelli, 2004). Grossbard et al. (2009) indicate that the association between BMI and body dissatisfaction among men is multifaceted, due to variations in cultural norms related to both leanness and muscularity. McCabe and Ricciardelli state that the desire to gain muscle and lose weight stems from individuals' BMI. In men, research supports the idea of a relationship between a lower BMI and an effort to gain weight and muscle tone (Grossbard et al., 2009; Jones & Crawford, 2005).

Focus of Present Study: Body Work

With increasing frequency, both men and women are turning to cosmetic surgery to alter their appearance in some way. As reported by the American Society for Aesthetic Plastic Surgery, cosmetic procedures performed by plastic surgeons, dermatologists, and otolaryngologists increased 119% between 1997 and 1999 (Castle, Honigman, & Phillips, 2002). In the past, cosmetic surgery has been linked to women; however, an increasing number of men are now making the decision to have cosmetic surgery to enhance physical features. The desire to change one's appearance in an effort to increase body satisfaction positively correlates with body image. As the number of men affected by Muscle Dysmorphia increases, the number of men receiving cosmetic surgery might surge as well. Such procedures are commonly referred to as body work. Gimlin (2002) describes *body work* as an umbrella term that encapsulates various practices that involve visual physical transformation. Body work can range from hair styling and dress to cosmetic surgery and tattooing. For the purpose of this study, body work will refer to cosmetic surgery, artificial tanning, and hair depilation.

One of the primary factors in Muscle Dysmorphia is negative body image, and cosmetic surgery is an avenue that men might travel down in order to increase their body image and body satisfaction. Pertschuk, Sarwer, Wadden, and Whitaker (1997) examined body image dissatisfaction in male cosmetic surgery patients. The study consisted of 30 men who completed two body image measures before their initial consultation with the surgeon. When compared to the normative sample, it was concluded that the male patients did not demonstrate greater dissatisfaction with their overall appearance than did the participants who did not complete cosmetic surgery consultations.

However, when asked specifically about the area they were considering for surgery, the participants reported significantly higher levels of dissatisfaction than did the normative sample (Pertschuck et al., 1997). In regard to Muscle Dysmorphia, this finding supports the idea that individuals suffering from the disorder become preoccupied with certain areas of the body. Individuals demonstrating symptoms of Muscle Dysmorphia and significant levels of dissatisfaction concerning perceived problem areas might consider cosmetic surgery as one option for increasing body satisfaction.

Similar to cosmetic surgery, artificial tanning is another behavior that individuals may engage in to improve their body satisfaction. Vannini and McCright (2004) found that an underlying motive for artificial tanning is the enhancement of physical appearance. After conducting 40 qualitative interviews, they found that participants clearly linked body image to self-esteem and reported that artificial tanning improved self-esteem. The researchers were interested in the interplay of gender and artificial tanning. In regard to cultural expectations of physical attractiveness, some of the male participants expressed no shame in violating gender expectations. Data collected from the male tanners suggest that men understand that there are cultural norms that persuade against being overly concerned with their appearance. However, most of the men surveyed perceived tanning to be similar to weightlifting. All the men interviewed worked out regularly and found nothing “effeminate” about tanning. Individuals suffering from Muscle Dysmorphia may be more likely to tan than those individuals who do not have the disorder. They may use artificial tanning as another tool to increase their body satisfaction. They may believe that tanned skin will highlight the contour of their muscles, which in turn increases their body satisfaction.

Hair depilation is another behavioral practice that has previously been considered a feminine activity. Boroughs, Cafri, & Thompson (2005) defined hair depilation as "body hair reduction or removal below the neck" (p. 637). Body hair was traditionally observed as a symbol of masculinity and directly related to the physical attractiveness of men. However, Luciano (2001) stated that the hairless male body ideal is gaining popularity. Men have started removing hair on their abdomen, chest, groin, and legs in an effort to become more attractive (Boroughs & Thompson, 2002). Klein (2007) stated that full-body depilation is becoming more prevalent and is known as "man-scaping" (pp. 67). Men use depilatories to highlight their musculature (Klein, 2007).

Boroughs et al. (2005) conducted a study that examined the probability that hair depilation is a new component of body image for men. The study included 118 subjects who completed the Body Depilation Questionnaire. Of the 118 participants, 75 subjects confirmed that they participate in some form of body depilation. Data analysis found that 74.7% of the subjects expressed that a significant reason for depilation was cleanliness, 69.3% reported that another significant reason was sex appeal, and finally 38.7% of the subjects explained that body definition/muscularity was a significant reason for engaging in hair depilation. This study highlighted the importance of extending research concerning body image in men and the role that body depilation plays. This study found that 16.6% of the participants reported that they would experience significant anxiety if hair removal was prevented. Hair depilation may be an important factor in future research concerning Muscle Dysmorphia because of the marked distress some individuals reported if they did not have the opportunity to remove hair. Also, if individuals are using hair

depilation as a tool to highlight muscle definition, it should be studied in conjunction with Muscle Dysmorphia.

Limitations of the Current Research and the Present Study

Although there is a growing body of research concerning Muscle Dysmorphia, limited research exists concerning correlates of muscle dysmoprhia. Body work is one such correlate that needs to be investigated. Research needs to be conducted to see if men with Muscle Dysmorphia symptoms endorse attitudes/behaviors such as body work to increase their body satisfaction. If this is this case, it would appear that individuals suffering from Muscle Dysmorphia are turning to alternatives outside the weight room to increase body image and satisfaction. The present study will determine if a relationship exists between Muscle Dysmorphia symptoms and attitudes/behaviors concerning body work.

Hypothesis

The specific hypothesis being examined in the current study is that men who have a larger number of Muscle Dysmorphia symptoms will have a more favorable outlook and higher prevalence rates of body work than men who have a low number of Muscle Dysmorphia symptoms.

Methods

Participants and Design

Participants in the current study were a convenience sample of men recruited from undergraduate classes at Western Kentucky University and the community of Bowling Green Kentucky and Somerset Kentucky. A total of 215 men completed the study. Ages of the participants ranged from 18 years to 39 years (*M* = 20.20, *SD* = 2.82). The sample was 72.1% Caucasian (*N* = 155), 12.6% African American (*N* = 27), 4.7% Hispanic (*N* = 10), 3.7% Asian American (*N* = 8), and 1.4% Biracial (N=3). Arabic, Pacific Islander, Latin, French, and European participants each represented 0.5 % of the sample with each group containing one participant. The mean number of years of education for the sample was 13.60 (*SD* = 1.20). The men in this study had a mean self-reported height of 71.40 inches or 5'11" (*SD* = 5.11), and a mean self-reported weight of 186 pounds (*SD* = 43.36). The mean Body Mass Index (BMI) score of this study was 26.41 (*SD* = 6.02).

Participants were asked to state whether or not they were involved in sports and to identify the type of sport in which they were involved. 41.4% of the sample indicated they did not participate in a sport (N = 89). A total of 16 sports were represented in the sample. The four most prevalent sports were football, basketball, soccer, and golf. Football was the most popular sport, with 15.8% of the sample indicating they played football (*N* = 34), 14.4 % played basketball (N = 31), 5.1% played soccer (N = 11), and 4.2% played golf (N = 9).

A quasi-experimental design was used to complete this study. The independent variable was symptoms of Muscle Dysmorphia. The dependent variables were the attitudes and behaviors associated with body work.

Measures

Demographics. Each participant completed a demographics survey. Participants reported their race, age, education, height, weight, and workout schedule (See Appendix A).

Muscle Dysmorphia Inventory. To assess Muscle Dysmorphia symptoms, participants were given the Muscle Dysmorphia Inventory (MDI, Short, 2005). The MDI uses 34 items to assess components of Muscle Dysmorphia, including body anxiety, compulsivity, illusory correlations, inadequacy, inappropriate eating, increased muscularity, muscularity drive, persistence, preoccupation, and social sacrifice. The questions are answered on a six-point Likert-type scale, ranging from 1 (*Strongly Disagree*) to 6 (*Strongly Agree*). "I am ashamed of my body shape or size" and "I feel anxious when I miss a workout" are examples of items found on the inventory. A total score was calculated by adding together all items. Higher scores indicate higher levels of Muscle Dysmorphia symptoms. The MDI has a Cronbach's alpha of .87 (Short, 2005), indicating good internal consistency. The MDI for this study had a Cronbach's alpha of 0.88. The MDI has a high level of test-retest reliability, $r = .59$ (Cubberely, 2009). The MDI has good concurrent validity while demonstrating poor predictive validity (Cubberely, 2009; See Appendix B).

Attitudes and Behaviors. To assess attitudes and behaviors surrounding body work, participants were given a 44-item attitude-behavior questionnaire (ABQ) created specifically for this study that targets these issues. The Cronbach's alpha found was 0.88, indicating good internal consistency. The questions were answered using a Likert-type

format, ranging from 1 (*Strongly Disagree*) to 6 (*Strongly Agree*). Two examples of items found on the inventory are, "I would consider pectoral implants" and "Waxing and/or shaving makes my muscles look more defined." (See Appendix C.)

Procedure

After being recruited from undergraduate classes and randomly off the street, participants first read the Preamble document (See Appendix D.) They then completed the demographic survey, the Muscle Dysmorphia Inventory, and the questionnaire created for this study. The entire procedure was completed online and took approximately 20 to 25 minutes to complete.

Results

Scores from each measure were summed to create two separate measures, the MDI and the ABQ. Then, a median-split was used to divide the data set into two groups based upon MDI scores. The median was found to be 82.0. Scores above 82 were categorized as a 1 (N= 105), which represents participants with a high level of Muscle Dysmorphia symptoms. Scores below 82 were categorized as a 0 (N=104), which represents participants with a low level of Muscle Dysmorphia symptoms. A significant difference was found between the high and low groups on the MDI in that participants in the high MDI group had higher scores on the MDI (M = 103.16, SD = 14.69) than individuals in the low MDI group (M = 68.26, SD = 9.97), t (df) = 7.79, $p < .001$.

The total scores from the ABQ were submitted to an independent samples t-test, with level of Muscle Dysmorphia symptoms as the independent variable. Results indicated that participants in the high MDI group had higher scores on the ABQ (M = 95.95, SD = 27.98) than participants in the low MDI group (M = 79.17, SD = 15.81), t (df) = 5.90, $p < .001$.

Next, a two-step regression analysis was conducted. Scores on the ABQ were the dependent variable. Age, BMI, sport participation, exercise participation, and MDI scores were independent variables. All variables but MDI were entered on the first step. As shown in Table 1, these variables were not a significant predictor of ABQ scores. MDI scores were entered on the second step. As shown in Table 1, this was a significant predictor of ABQ scores. MDI scores account for approximately 12% of the variance in ABQ scores, which is statistically significant, t = 5.29, $p < .001$.

Table 1

Regression analysis results examining specific factors as a predictor of ABQ scores.

Variable	T	Sig.	β	Std. Error	R^2
Step One					
BMI	-1.47	.14	-.11	.308	
Age	1.14	.26	.09	.657	
Exercise	2.01	.05	.16	1.83	
Sport Participation	-0.32	.75	-.03	3.89	.034
Step Two					
BMI	-2.03	.04	-.15	0.29	
Age	0.54	.59	.04	0.62	
Exercise	0.77	.44	.06	1.77	
Sport Participation	-0.28	.78	-.02	3.64	
MDI	5.29	.00	.37	.080	0.16

Note: BMI is the body mass index of the subject, age is the numerical age of the subject, exercise refers to the amount of exercise the subject engages in, sport participation is a measure of whether or not the participant is actively involved in a competitive sport, and MDI refers to the scores on the Muscle Dysmorphia Inventory.

Discussion

The present study aimed to determine if a relationship existed between Muscle Dysmorphia symptoms and attitudes/behaviors concerning body work. It was expected that men with a higher number of Muscle Dsymorphia symptoms would have a more positive view of using body work to enhance their body satisfaction than men with a lower number of Muscle Dysmorphia symptoms.

The specific hypothesis stated that men who have a large number of Muscle Dysmorphia symptoms will have a more favorable outlook and higher prevalence rates of body work than men who have a low number of Muscle Dysmorphia symptoms. The results of this study provide support for the hypothesis. An independent samples t-test was completed using Muscle Dysmorphia symptoms as an independent variable. It was found that individuals with a high number of Muscle Dysmorphia symptoms more heavily endorsed attitudes/behaviors associated with body work than those with a low number of Muscle Dysmorphia symptoms. The results from a linear regression analysis found that Muscle Dysmorphia symptoms were a significant predictor of attitudes/behavior towards body work. The results of this study support a direct relationship between Muscle Dysmorphia symptoms and the attitudes and behaviors associated with body work.

Grieve's (2007) model postulates that perfectionism plays a role—both directly and indirectly—in the formation of Muscle Dysmorphia. Body work plays directly into this. Men wishing to obtain a perfect (in their estimation) body type might turn to different forms of body work to enhance or highlight certain body parts. The desire for

perfection might make these men feel that, without body work, their bodies will not live up to the perfect standard.

There are limitations to the current study. Self-report questionnaires were used to collect the data for this study, which is one limitation. Self-report measures are valid research tools when participants answer questions posed to them honestly (Schwarz, 1999). When completing self-report questionnaires, participants could have difficulty understanding questions, misread questions, or deliberately answer the questions dishonestly. Whether or not the participants accurately stated their weight and height is another limitation to this study because the values determine the BMI, which was taken into consideration.

Another limitation to the current study is the validity and reliability of the ABQ scale. The ABQ scale was devised by the researcher for the purpose of this study. The questions chosen for the questionnaire were used to tap into attitudes and behaviors related to body work. The ABQ was not validated before the study, so it is hard to determine if the questionnaire measured what it was intended to measure, however the statistics from this study suggest it is a good test.

Another limitation that must be considered is the subject sample. The majority of the participants were college-age, Caucasian men. This must be taken into consideration when generalizing results to the general population; however this subset of the population is the most at risk for developing the disorder.

There is a growing body of research concerning Muscle Dysmorphia; however, limited research exists concerning correlates of Muscle Dysmorphia. The current study addresses this limitation by examining body work as a correlate to the disorder. Men with

Muscle Dysmorphia symptoms endorsed attitudes/behaviors such as body work that might be used to increase their body satisfaction. Grieve's (2007) model highlights body dissatisfaction as a prominent factor in developing Muscle Dysmorhpia. Body dissatisfaction of males who engage in cosmetic surgery is significant in regards to specific body parts (Pertschuk et al. 1997). This study supports body work as a correlate of Muscle Dysmorphia, and suggests that men with a higher number of symptoms could turn to cosmetic surgery, hair depilation, and artificial tanning in order to enhance their appearance. As men with a higher number of Muscle Dysmorphia symptoms have a more favorable outlook on Body Work, research needs to be conducted to examine whether or not more strict guidelines should be implemented for practitioners providing Body Work services.

It appears that individuals suffering from Muscle Dysmorphia are turning to alternatives outside the weight room to increase body image and satisfaction. More research should be done to examine the lengths that individuals with Muscle Dysmorphia are relying on to improve their body satisfaction. Also, the current study suggests that future research needs to be completed to better understand Muscle Dysmorphia and the correlates of the disorder. If more correlates are researched this could lead to more optimal treatment of the disorder.

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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: _____

Height: _____

Weight: _____

How often do you exercise?

3 + days /week 1-2 days/ week A couple times a month Rarely / Never

How often do you diet?

Always Frequently Occasionally Never

Do you participate in sports? Yes/No
If so which one? _____

Your household income?

0-$25,000 $25,000-50,000 $50,000-75,000 $75,000-100,000 Not Sure

Your Parents Income?

0-$25,000 $25,000-50,000 $50,000-75,000 $75,000-100,000 Not Sure

Appendix B

Muscle Dysmorphia Inventory (MDI)

MUSCLE DYSMORPHIA INVENTORY

<u>INSTRUCTIONS:</u> Please respond to each of the following statements. Circle response choice that best describes you.

STRONGLY DISAGREE	*SOMEWHAT* DISAGREE	*SLIGHTLY* DISAGREE	*SLIGHTLY* AGREE	*SOMEWHAT* AGREE	*STRONGLY* AGREE
1	**2**	**3**	**4**	**5**	**6**

1. When I see my reflection in the mirror or a window, I feel badly about my body size or shape.
   1 2 3 4 5 6
2. Working out causes problems in my job.
   1 2 3 4 5 6
3. I eat specific foods at specific times throughout the day in order to gain muscle mass.
   1 2 3 4 5 6
4. When I see muscular men, it makes me feel badly about my body shape or size.
   1 2 3 4 5 6
5. I am inclined to continue to work out when I am sick.
   1 2 3 4 5 6
6. I am ashamed of my body shape or size.
   1 2 3 4 5 6
7. I have difficulty maintaining relationships because of thoughts about my body.
   1 2 3 4 5 6
8. I am inclined to continue to work out when I am injured.
   1 2 3 4 5 6
9. I have difficulty maintaining relationships because of thoughts of working out.
   1 2 3 4 5 6
10. I believe bad things happen in my life when I do not have a specific level of muscularity.
    1 2 3 4 5 6
11. Working out causes problems in my romantic relationships.
    1 2 3 4 5 6

*12. I believe I am more muscular than others.
    1 2 3 4 5 6

13. I feel badly when I do not get to work out.
    1 2 3 4 5 6
14. I eat by myself.
    1 2 3 4 5 6
15. I am inclined to continue to work out against doctor's orders.
    1 2 3 4 5 6
16. I am inclined to participate in activities that require wearing swimsuits.

    1 2 3 4 5 6

STRONGLY DISAGREE 1	*SOMEWHAT* DISAGREE 2	*SLIGHTLY* DISAGREE 3	*SLIGHTLY* AGREE 4	*SOMEWHAT* AGREE 5	*STRONGLY* AGREE 6

17. I do not believe I am as muscular as others.
    1 2 3 4 5 6
18. I want to be more muscular than I currently am.
    1 2 3 4 5 6
19. I think I look better when I have large muscles.
    1 2 3 4 5 6
20. Working out causes problems in my friendships.
    1 2 3 4 5 6

*21. I am muscular enough.
    1 2 3 4 5 6

22. If I could increase my muscle mass, I would.
    1 2 3 4 5 6
23. I have difficulty focusing on schoolwork because of thoughts about my body.
    1 2 3 4 5 6
24. I am not muscular enough.
    1 2 3 4 5 6
25. Others feel that I am way too focused on my body shape or size.
    1 2 3 4 5 6
26. I have difficulty focusing on schoolwork because of thoughts of working out.
    1 2 3 4 5 6
27. I feel insecure about my body.
    1 2 3 4 5 6
28. I use legal or illegal supplements (creatine or anabolic steroids) to help develop my muscles.
    1 2 3 4 5 6
29. I am inclined to participate in activities that require minimal clothing.
    1 2 3 4 5 6
30. The less clothing I wear the more anxious I become.
    1 2 3 4 5 6
31. I eat a large amount of protein in order to increase my muscularity.
    1 2 3 4 5 6
32. I feel anxious when I deviate from my diet.
    1 2 3 4 5 6
33. I believe bad things happen to me when I do not keep my workout schedule.
    1 2 3 4 5 6
34. I feel anxious when I miss a workout.
    1 2 3 4 5 6

Appendix C

Attitude-Behavior Questionnaire (ABQ)

<u>INSTRUCTIONS:</u> Please respond to each of the following statements. Circle response choice that best describes you.

STRONGLY DISAGREE	*SOMEWHAT* DISAGREE	*SLIGHTLY* DISAGREE	*SLIGHTLY* AGREE	*SOMEWHAT* AGREE	*STRONGLY* AGREE
1	**2**	**3**	**4**	**5**	**6**

1. Artificial tanning is something that I do often.
   1 2 3 4 5 6
2. I shave and/or wax my legs.
   1 2 3 4 5 6
3. I have thought about having plastic surgery.
   1 2 3 4 5 6
4. Without plastic surgery, my calves will never look as good as I want them to.
   1 2 3 4 5 6
5. Only women should shave and/or wax parts of their body.
   1 2 3 4 5 6
6. I intend to get calve implants.
   1 2 3 4 5 6
7. More men should shave their legs, chest, back, and/or arms.
   1 2 3 4 5 6
8. My muscles look more defined if I wax and/or shave.
   1 2 3 4 5 6
9. Having a tan is important to me.
   1 2 3 4 5 6
10. I shave and or/wax my chest.
    1 2 3 4 5 6
11. Plastic surgery is worth the pain of recovery.
    1 2 3 4 5 6
12. I would consider getting pectoral implants.
    1 2 3 4 5 6
13. I wish I could have botox injections.
    1 2 3 4 5 6
14. Only women should use artificial tanning.
    1 2 3 4 5 6
15. I shave and/or wax my arms.
    1 2 3 4 5 6
16. I have never used any form of artificial tanning (tanning bed/artificial tanning).
    1 2 3 4 5 6
17. Plastic surgery is important because I can achieve the look I want.
    1 2 3 4 5 6
18. Men should not shave their legs or any part of their body.
    1 2 3 4 5 6
19. I shave and/or wax my back.
    1 2 3 4 5 6

STRONGLY DISAGREE	*SOMEWHAT* DISAGREE	*SLIGHTLY* DISAGREE	*SLIGHTLY* AGREE	*SOMEWHAT* AGREE	*STRONGLY* AGREE
1	**2**	**3**	**4**	**5**	**6**

20. I do not like having hair on my arms, legs, back, or chest.
    1 2 3 4 5 6
21. I use artificial tanners (tanning bed/self tanner).
    1 2 3 4 5 6
22. I feel better about myself if I have a tan.
    1 2 3 4 5 6
23. I think artificial tanning (tanning bed/self tanner) is acceptable.
    1 2 3 4 5 6
24. It is acceptable to shave my legs.
    1 2 3 4 5 6
25. I plan to get pectoral implants.
    1 2 3 4 5 6
26. Plastic surgery is a great way to get your body to look the way you want.
    1 2 3 4 5 6
27. Only women should get plastic surgery.
    1 2 3 4 5 6
28. I would consider having plastic surgery.
    1 2 3 4 5 6
29. My body looks better if I wax and/or shave it.
    1 2 3 4 5 6
30. Men look better with waxed eyebrows.
    1 2 3 4 5 6
31. I wax and/or shave my chest, arms, back, or legs.
    1 2 3 4 5 6
32. Going to the tanning bed is part of my normal routine.
    1 2 3 4 5 6
33. Waxing and/or shaving is a waste of time.
    1 2 3 4 5 6
34. I plan to have Botox injections.
    1 2 3 4 5 6
35. Spending money at tanning salons or on tanning products is acceptable.
    1 2 3 4 5 6
36. More men should take advantage of plastic surgery.
    1 2 3 4 5 6
37. Artificial tanning (tanning bed/self tanner) is important to me.
    1 2 3 4 5 6
38. Waxing and/or shaving is part of my normal routine.
    1 2 3 4 5 6
39. I feel better about my looks when I wax my eyebrows.
    1 2 3 4 5 6
40. I plan to have liposuction.
    1 2 3 4 5 6

STRONGLY	***SOMEWHAT***	***SLIGHTLY***	***SLIGHTLY***	***SOMEWHAT***	***STRONGLY***
DISAGREE	**DISAGREE**	**DISAGREE**	**AGREE**	**AGREE**	**AGREE**
1	**2**	**3**	**4**	**5**	**6**

41. Liposuction is an important way to keep weight down.
    1 2 3 4 5 6
42. I would be more satisfied with my body if I could have plastic surgery.
    1 2 3 4 5 6
43. I would not consider plastic surgery.
    1 2 3 4 5 6
44. I spend time waxing and/or shaving my body.
    1 2 3 4 5 6

Appendix D

Preamble Document

Preamble Document

Men and Body Work

You are being asked to participate in a study looking at different opinions men may have about body work. 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 collected from you. This study is being conducted through Western Kentucky University. By completing the following questionnaire you are giving your consent to participate in this project.

1. **Nature and Purpose of the Project:** This study is examining men's attitude and behavioral perceptions of body work.
2. **Explanation of Procedure:** During participation you will be asked to complete a section about your age, education, ethnicity, height, weight, and work-out schedule Also, you will be asked to complete two short measures. This survey should take about 20 - 30 minutes to complete.
3. **Discomfort and Risks:** The risks to participation appear to be small. There is always a slight chance that any item could cause discomfort. Please let the researcher know if any item 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). Your instructor should offer alternate forms of extra credit. Other benefits include a sense of having helped contribute to science and a sense of pride or accomplishment for helping a fellow student. Benefits to science include providing data that will be beneficial to this area of study.
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, and will be presented as averages, which makes it impossible to identify individual participants.
6. **Refusal/Withdrawal:** You do not have to participate in this study. Such a refusal 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 think of questions later on, direct them to Rick Grieve, Ph.D., at (270) 754-4417, Monday-Friday from 9:00 am until 4:00 pm.

You also understand that it is not possible 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.

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
Mr. Paul Mooney, Human Protections Administrator, TELEPHONE: (270) 745-2321

Appendix E

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 led to a disorder known as Muscle Dysmorphia. We are interested in the relationship between the number of Muscle Dysmorphia symptoms an individual may have and their attitudes and behavior toward body work. As it pertains to this study, body work refers to cosmetic surgery, hair depilation, and artificial tanning. It is predicted that men with a higher number of Muscle Dysmorphia symptoms will have a more favorable outlook and higher prevalence rates of body work. 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 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, 2010.