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Examining the Relationship between Criticism and Muscle Dysmorphia Symptomotology in Collegiate Men

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EXAMINING THE RELATIONSHIP BETWEEN CRITICISM AND MUSCLE DYSMORPHIA SYMPTOMATOLOGY IN COLLEGIATE MEN

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Master of Arts

By
Lauren M. Menees

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EXAMINING THE RELATIONSHIP BETWEEN CRITICISM AND MUSCLE
DYSMORPHIA SYMPTOMATOLOGY IN COLLEGIATE MEN

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The goal of the current study was to examine the relationship between critical comments that men can recall others making about their bodies and their current level of Muscle Dysmorphia (MD) symptomatology. Participants (N = 118) were recruited via study board from a mid-Western university with a population of 20,674 students. The hypothesis of the current study was that men who can recall critical comments about their bodies will report more MD symptomatology than those who remembered no such comments. In addition, it was expected that out of those who recall critical comments, the more severe or threatening they remember the comment being, the more MD symptomatology they will report. In this study it was also expected that men who associate more negative emotions with the comment will have higher levels of reported MD symptomatology.

To evaluate the first hypothesis, an independent samples t-test was used. Results did not support this hypothesis, and no significant differences were found on MD symptoms between participants who recalled comments about their bodies and those who did not recall such comments. These results are not consistent with previous research that was conducted on women with eating disorders which found that female athletes with disordered eating habits were more likely to recall critical comments made about their
bodies than women without disordered eating habits. Results supported the second and third hypotheses. Correlational analyses were conducted to determine if there was a relationship between how threatened a participant reported being from the critical comment made about his body and his current level of MD symptomotology. A significant correlation was found. A correlational analysis revealed that there was a significant relationship between associating negative emotions with the critical comment and having higher levels of MD symptomotology.

The participants in the study were asked to name who made the comment about their bodies. The most commonly named person was a friend, followed by a coach, and then a girlfriend. Additional tests showed that there was no significant correlation between how long ago the comment occurred and participants’ levels of MD symptoms. However, there was a significant relationship between how well a person remembered the comment and his current level of MD symptomotology.

Results from this study extend on what is known about MD and the effects of criticism. Although there was no significant relationship between one’s ability to recall critical comments made about his body and his current level of MD symptomotology, there was a significant relationship between finding the comment threatening and associating negative emotions with the comment, if one was reported, and one’s current level of MD symptomotology.

One limitation of the study is that all of the data was gathered via self-report measures. Data may have been affected by poor recall by the participants as well as denial of symptoms. Also, all of the participants attended Western Kentucky University. There was little diversity in regards to age and race.
Introduction

In the last 15 years, research has focused much more on body dissatisfaction in men and the associated behavioral disturbances than it had previously (Cafri & Thompson, 2004). One particular disorder that relates to the behavioral dysfunctions in males with regards to “improving” their bodies is Muscle Dysmorphia (MD). This disorder, which is currently thought of as a subcategory of Body Dysmorphic Disorder (BDD), is characterized as a person being preoccupied with his or her level of musculature to a degree that causes distress and impairment in social and occupational functioning (Pope, Gruber, Choi, Olivardia, & Phillips, 1997). Individuals suffering from this disorder spend much of their time lifting weights and focusing on their diets which, in turn, negatively impacts their relationships with others and their occupational lives (Pope et al., 1997). MD is a disorder in which an individual has a dislike of his or her current body type and has a strong desire to increase his or her body mass (Grieve, 2007). People with MD strive to achieve their ideal body type by excessively lifting weights and eating large amounts of protein rich foods (Grieve, 2007). It is also not uncommon for these people to use drugs or dietary supplements to increase their body mass (Grieve, 2007).

Compared to those without MD, those with the disorder report significantly greater body dissatisfaction and spend more time each day thinking about their musculature (Choi, Pope, & Olivardia, 2002). They often attempt to conceal their appearance, check mirrors, use steroids, and sacrifice social activities in order to exercise (Olivardia, Pope, & Hudson, 2000). With respect to prevalence rates, Olivardia (2001) estimated that between 5% and 10% of weightlifters, as well as 9% of those with BDD
have MD. However, it is not clear how common this disorder is in the general population (Grieve, 2007). Large scale studies on MD have not yet been performed (Cororve & Gleaves, 2001).

Although MD is not currently listed in the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition, Text Revision (DSM-IV-TR), it is considered to be a sub-category of BDD (Grieve, 2007; Pope et al., 1997); however, this disorder also shares characteristics with eating disorders (Maida & Armstrong, 2005; Grieve, 2007). For example, in both MD and in eating disorders, a person’s self-opinion is highly influenced by his or her shape or size (Grieve, 2007). The category under which this disorder fits best has been debated. Regardless of the categorization of MD, Olivardia (2001) proposed certain criteria that must be met in order for an individual to receive this diagnosis. First of all, the person must have a preoccupation with his or her body not being sufficiently lean and muscular; this preoccupation must cause the person significant distress or impairment in several areas exhibited by at least two of the following four criteria. One criterion is that the individual gives up important activities because of the need to maintain his or her exercise schedule or diet. Another criterion is that the person feels distress when his or her body is exposed to others, or the person attempts to avoid these types of situations altogether. Third, the preoccupation with his or her body causes the person to have marked impairment in an important area of functioning, which usually is a social or occupational area. Fourth, the person continues to exercise despite a knowledge and understanding that undesirable physical or psychological consequences may occur as a result. The second mandatory criterion that must be met states that the
person's preoccupation with his or her body is on being too small and not muscular
enough, but not on being fat.

To elaborate further on the characteristics of this disorder, Lantz, Rhea, and
Mayhew (2001) discussed the psycho-behavioral characteristics of people with MD.
These characteristics include having concerns about body size and body symmetry,
having dietary constraints, using pharmacological aids and dietary supplements, having
exercise dependence, and portraying physique protection. As mentioned previously, the
main characteristic of those with MD is having a preoccupation with body size as defined
by the criteria proposed by Olivardia (2001).

It is likely that an individual with MD is very concerned with issues regarding his
or her diet (Lantz et al., 2001). The goal of the diet is to ingest foods that will increase
muscle mass while reducing fat (Lantz et al., 2001). Among males, dieting to lose weight
and dieting to gain weight have both been found to be potentially harmful to one's health
(Krowchuck, Kreiter, Woods, Sinal, & DuRant, 1998). Studies have found that
adolescent boys and young men are using both of these dieting techniques (Krowchuck et
al., 1998). In addition, Grieve, Wann, Henson, and Ford (2006) researched the weight
management practices of collegiate men and women and found that 56% of the men
sampled indicated that they had dieted to gain weight at some point.

Another study found that strategies to increase weight and muscularity are
moderately correlated with strategies to lose weight; therefore, it is suggested that men
use both of these strategies together (Ricciardelli & McCabe, 2002). Concern emerges
when men cycle between trying to lose and gain weight because they manifest an
increased risk for developing anorexia nervosa or bulimia nervosa (Goldfield, Harper, & Blouin, 1998).

Sticking to such a strict diet has been found to be harmful to a person's social and occupational functioning. Pope and his colleagues interviewed men who stated that they avoid going out to dinner or on extended trips because they cannot control what and when they eat, which can obviously have detrimental effects on their social functioning (Pope et al, 1997; Pope, Katz, & Hudson, 1993). Cafri et al. (2005) state that even though there is little known about the effects of dieting and drug use by these men, there is enough evidence to suggest that adverse physical and psychological outcomes are probable.

In addition to dieting, taking over the counter dietary aids and nutritional supplements is also quite prevalent. Lantz et al. (2001) include pharmacological aids and dietary supplements in their model describing the psycho-behavioral characteristics of MD. These aids and supplements include nutritional supplements, energy drinks, and steroids. Dangerous psychological effects have been associated with the use of anabolic steroids (AAS). For example, studies have found that some men who use steroids show clinically significant mood swings (Cafri et al., 2005). In fact, homicidal and near-homicidal incidents associated with hostility and aggression from AAS use have been reported (Pope & Katz, 1990). Pope, Kouri, & Hudson (2000) report that the use of AAS leads to cognitive impairments and that withdrawal symptoms from discontinuing AAS can lead to severe depression and suicidal tendencies (Pope & Katz, 1990). Although the use of steroids is highly dangerous and the negative effects are widely known, Brower, Blow, Young, & Hill (1991) have found that steroid use appears to be addicting. In fact,
it is estimated that 57% of AAS users meet DSM-III criteria for substance dependence (Brower et al., 1991). Copeland, Peters, and Dillon (2000) conducted a study on AAS users in Australia in which 78% of the users exhibited at least one symptom of dependence or abuse. Overall, the researchers indicated that 23% of their participants met DSM-IV criteria for substance dependence.

Supplements other than steroids are often used, such as prohormones and ephedrine (Cafri et al., 2005). Androstenedione is a prohormone that increases blood testosterone concentrations and can increase a person’s strength and lean mass (Cafri et al., 2005). Ephedrine is also often taken because it has been found to reduce fat without subsequently decreasing muscle mass (Dullo, 1993). Ephedrine is chemically related to amphetamines, and the effects are similar (Karch, 2002). There is a risk that a person can become addicted to the substance, as well as a number of other dangers, such as sleeplessness, tachycardia, and irritability (Medical Economics, 2008).

Lantz and his colleagues (2001) report exercise dependence as another psycho-behavioral characteristic of MD. A person is considered to be exercise dependent if he or she compulsively exercises, maintains a strict and intense exercise schedule, resists the urge to not exercise, feels guilty about breaking his or her exercise routine, steps up work-out regimens when an exercise is missed, exercises no matter if he or she is injured or sick, and keeps meticulous details of work-outs (Blumenthal, O‘Toole, & Chang, 1984). These people typically plan their days around their exercise routines (Fussel, 1991).

People with muscle dysmorphia symptomatology often attempt to hide their bodies because they view themselves as small and weak; this attempt to conceal their
bodies is known as physique protection (Lantz et al., 2001). Pope and his colleagues (1997) state that the disturbances that these men have with their body images leads them to adopt unhealthy behaviors in order to develop more muscular physiques, as well as to undertake efforts to hide their bodies from others.

Aside from the obvious health risks, negative psychosocial consequences of MD have been noted. Lantz et al. (2001) report alienation, positive deviance, and narcissism as negative consequences of the disorder. Alienation occurs when someone, like a bodybuilder, does little except training and thinking about training; this leaves little time for activities that are not related to training, such as spending time with friends (Fisher, 1997). Another consequence is positive deviance, which has been defined as over conformity to a particular role (Hughes & Coakley, 1991) In the case of people with MD, they may exercise despite risks of pain and injury (Lantz et al., 2001). Also, these individuals feel inadequate and engage in physical activities to compensate for these feelings. After their physical development, people with this disorder affirm their existence by the attention of others, whether that attention is positive or negative. This leads them to adopt a narcissistic attitude in which they become so preoccupied with themselves that all others are excluded (Klein, 1993; Lowen, 1983).

**Etiological Model of MD**

Research has shown that there are many risk factors for developing MD (Grieve, 2007). As previously stated, the behaviors exhibited by those with MD can be harmful to their well-being in several areas of their lives. There is evidence that there are both biological and environmental factors that influence the likelihood of one engaging in these risky behaviors for the sake of increasing muscularity (McCabe & Ricciardelli,
Such factors include the media and participation in sports that encourage a lean and muscular physique (Grieve, 2007), as well as social influences, such as messages from parents and peers (Cafri, Yamamiya, Brannick, & Thompson, 2006). Experiencing negative comments about one’s body may also be a factor that increases the likelihood that the individuals will develop MD. In a model proposed by Grieve (2007), several specific factors contribute to the development of MD: body dissatisfaction, body distortion, body mass, media influences, ideal body internalization, sports participation, low self-esteem, perfectionism, and negative affect (Grieve, 2007).

From Grieve (2007). Contributing factors in the development of Muscle Dysmorphia

In Grieve’s (2007) model, body dissatisfaction is defined as a discrepancy between a person’s actual body and what he or she considers to be the ideal body.
Findings suggest that body dissatisfaction, low self-esteem, body distortion, and negative affect all relate to and influence each other. For instance, there is a significant correlation between higher levels of muscle dissatisfaction and lower levels of self-esteem, higher levels of depression, and dissatisfaction with life (Smith & Grieve, 2009; Cafri, Strauss, & Thompson, 2002; McCreary & Sasse, 2000). Interestingly, the average man wishes that he had an extra 15 to 27 pounds of muscle mass (Gruber, Pope, Borowiecki, & Cohane, 1999; Pope, Phillips, & Olivardia, 2000). Brower, Blow, & Hill (1994) found that muscle size dissatisfaction was the most common reason that a person decided to use steroids, and satisfaction with his or her body increased as he or she gained more muscle mass. When the AAS users came off steroids, the most common complaints were body image dissatisfaction and a desire to take more steroids (Brower, Blow, & Hill, 1994). Therefore, it is easy to see how people with MD would want to use steroids and would have a difficult time discontinuing them given their low levels of body satisfaction.

Men with MD also have a problem with body distortion. These men believe that they are smaller than they actually are (Grieve, 2007). Body distortion is influenced by and affects a man’s level of body dissatisfaction (Grieve, 2007). Interestingly, body distortion is a major characteristic of eating disorders in women. Women with anorexia nervosa believe that they are bigger than they actually are (Grieve, 2007).

Grieve (2007) states that it is much more likely that a very muscular man would develop MD than a smaller sized man. Although being overly muscular is not part of the diagnostic criteria for MD, the criteria state that the person is preoccupied with exercising, suggesting that he or she is more than likely a muscular individual (Grieve,
Cafri and his colleagues (2005) described two scenarios that would lead toward obsessions about exercise. First, those with a low body mass index (BMI) may have a desire to become bigger and more muscular. Second, those with a high BMI may be overweight and also want to become more muscular to reduce fat.

Grieve (2007) states that low self-esteem contributes to the development of MD. Low self-esteem has been found to be more common in individuals with eating disorders than those without (Jacobi, Paul, de Zwaan, Nutzinger, & Dahme, 2004). Cafri et al. (2005) state that self-esteem is a major factor in predicting body dissatisfaction, which leads to the utilization of strategies to increase musculature and to disordered eating among adolescent boys. Those with higher self-esteem are less likely to conform to the pressure to be thin (Stice, 2002). Lifting weights and exercising, which is part of the MD symptomatology, helps to increase self-esteem (Lantz et al., 2001). It has been found that adolescent boys with lower levels of self-esteem are more likely to use steroids (Irving, Wall, Neumark-Stzainer, & Story, 2002; Kindludh, Hagekull, Isacson, & Nyberg, 2001). Furthermore, there is evidence that self-esteem and peer group pressure interact; men who have lower levels of self-esteem are more likely to conform to pressure to alter their bodies than those with higher levels of self-esteem (Ricciardelli & McCabe, 2001). Basically, individuals with low self-esteem are likely to engage in muscle building activities to increase their self-esteem (Lantz et al., 2001).

Perfectionism is another factor of Muscle Dysmorphia in Grieve’s (2007) model. He defines this characteristic as striving for goals that are unrealistic. Men with muscle dysmorphia strive for the “perfect body” and are never satisfied with their current body. Just as it has been found that women with eating disorders have higher levels of
perfectionism, it is hypothesized that men with muscle dysmorphia symptoms also have higher levels of perfectionism (Grieve, 2007).

Of course, all of this self-focus and assessment leads to negative emotional consequences when a perfectionist cannot possibly attain his unrealistic goals. Research has shown that there is a correlation between negative affect and the use of strategies to increase muscle mass among adolescent boys (McCabe & Ricciardelli, 2003).

As previously stated, those with low levels of self-esteem are more likely than others to conform to peer pressure. Additionally, it has been found that negative affect also interacts with peer pressure so that those with high levels of negative affect are most susceptible to peer pressure and are likely to engage in unhealthy behaviors to increase muscle mass (Ricciardelli & McCabe, 2001).

Another factor in Grieve’s (2007) model is ideal body internalization. Stice (2002) proposed that internalizing what is considered to be the thin ideal causes body dissatisfaction for women with eating disorders. Therefore, it can be presumed that men also internalize the pressures to conform to the ideal male body type and may utilize unhealthy behaviors to do so. The cultural ideal body for men is a mesomorphic body shape. As men accept this as the ideal body shape, they strive to obtain such a form. It has been hypothesized that, as a man internalizes that ideal body, the likelihood that he will develop MD increases (Grieve, 2007).

Another factor, sports participation, has been found to increase the likelihood that one will develop MD. Cafri and his colleagues (2005) state that sports encourage drug use and dieting abuse in order to improve athletic performance. Other researchers have concluded that athletes who are highly involved in sports are at a higher risk of
developing disordered eating habits (Hausenblas & Carron, 1999; Mickalide, 1990; Striegel-Moore, Silberstein, & Rodin, 1986). Adolescent wrestlers (Kinigham & Gorenflo, 2001; Oppliger, Landry, Foster, & Lambrecht, 1993) and runners (Parks & Read, 1997) are the groups that are the most likely to report higher levels of disordered eating.

According to Grieve (2007), the media also has an impact on the likelihood that one will develop MD. For example, Duggan and McCreary (2004) indicated that men who read muscle or fitness magazines have higher levels of body dissatisfaction than those who do not. Also, individuals who strongly identify with media idols that have the “perfect body” are more likely to develop disordered eating habits than those who do not (Wichstrom, 2000). Two studies stated that media exposure may be a source that causes muscle dissatisfaction (Agilita & Tantleff-Dunn, 2004; Leit, Gray, & Pope, 2002). Lorenzen, Grieve, and Thomas (2004) found that the effect on men’s body satisfaction after viewing the muscular ideal body was similar to the effect that viewing the female ideal body had on women; the men reported lower levels of body satisfaction after viewing pictures of muscular men. Likewise, a study by Baird and Grieve (2005) indicated that men who viewed advertisements of male models reported greater levels of body dissatisfaction than those who viewed an advertisement for a product; the latter group showed no change in body satisfaction.

**Sociocultural Influences**

In research on female eating disorders, there is evidence that media influences are associated with disordered eating and body dissatisfaction (Cafri et al., 2006). Although not included in Grieve’s (2007) model, many researchers have examined the possibility
that there are other sociocultural factors aside from the media that are associated with the development of MD. It is assumed that the sociocultural influences that contribute to eating disorders in females are the same as the influences that contribute to the drive for muscularity in men. For one, family members can have a significant impact on one’s feelings about his or her appearance and in turn, also affect his or her dieting or exercise practices (Stanford & McCabe, 2005). Because of this, messages that men receive from parents, peers, and the media have been repeatedly assessed (Cafri et al., 2005). These sociocultural influences predict body dissatisfaction (Stanford & McCabe, 2005) and muscle building activities in adolescent boys (Smolak, Murnen, & Thompson, 2005). Interestingly, research from Stanford & McCabe (2005) suggests that parental messages influence a male’s appearance more than the media does.

Much research has focused on the relationship between MD symptomatology and parental and peer influences. One study showed that receiving perceived negative messages from parents and peers predicted that one would engage in strategies to increase weight and muscles (McCabe & Ricciardelli, 2003). Body dissatisfaction has been found to be correlated with parental expectations and criticism (Jonda, 2007). Parental messages can significantly predict whether a person is satisfied with his or her muscles, overall body, food intake, and exercise plan (Stanford & McCabe, 2005). Perceived messages from fathers are more associated with the son engaging in muscle building activities, and messages from mothers are associated with losing weight (Stanford & McCabe, 2005). Research shows that parents have more of an influence on their son’s dieting and muscle building behaviors than the media or peers do (Jonda, 2007). In fact, boys who indicated that it was important to their fathers that they not be
overweight were likely to be constant dieters (Field et al., 2001). Although both parents have been found to be influential in the exercise and dieting behaviors of their children, mothers are more influential than fathers when it comes to these behaviors (Wertheim, Martin, Prior, Sanson, & Smart, 2002).

Alternatively, another study reports that messages from peers are more important than messages from parents (Stanford & McCabe, 2002). Teasing from peers during childhood is negatively correlated with body image in young adulthood (Gleason, Alexander, & Somers, 2000). Likewise, popularity among peers is weakly correlated with efforts to increase muscle mass among adolescent males (McCabe, Ricciardelli, & Finemore, 2002).

The evidence shows that sociocultural influences are frequently the main predictors of MD symptomotology (Jonda, 2007). Ricciardelli and McCabe (2001) reported that boys who perceive pressures from their fathers, female friends, and the media, and who also have a low self-esteem and high levels of negative affect, are likely to engage in activities to enhance their muscles. Clearly, the negative messages that one perceives from social influences have the potential to produce body dissatisfaction, a factor that has been found to be a probable cause of MD (Grieve, 2007). In fact, several researchers have investigated the relationship between the disordered eating habits of women and the comments that others have made to them about their bodies. Kerr, Bermann, & De Souza (2006) found that gymnasts who received instructions to lose weight had significantly greater levels of disordered eating than those who had not received such comments.
Critical Comments

Muscat and Long (2008) conducted a study with women to examine the relationship between critical comments made about one’s body and disordered eating. Specifically, they looked at critical comments made in regards to one’s weight and body shape. In this particular study, the researchers focused on female athletes and sports participants, the athletes being more athletically involved in a particular activity than the sports participants, who participated in athletic activities at a more casual level. The researchers found that the greater the level of athletic involvement of a woman, the higher the frequency of critical comments about her body were recalled; however, the athletes and sports participants did not differ in the level of disordered eating patterns. In addition, when recalling the critical comment, the athletes were more likely to associate stronger negative emotions such as shame and anxiety with the comment than the sports participants did.

Individuals with diagnosed eating disorders are more likely to respond negatively to chance remarks about their bodies (Lask & Bryant-Waugh, 2000). Researchers have suggested that the comments that individuals receive from parents and peers predict the onset of bulimia nervosa (Palmer, 1998; Stice, 1998). Muscat (2001) reported that female athletes with disordered eating indicated that critical comments made about their bodies from people who were significant to them, such as peers, coaches, and family, were pivotal points in their lives in regards to their eating behaviors.

In Muscat and Long’s (2008) study, the results of a content analysis revealed that three main themes emerged for critical comments, as well as six sub-themes. One theme of the comments was that they had a purpose for being made, whether it was in regards to
the woman’s appearance, performance, health, or the need for her to change her weight. Of the comments recalled, 74% of the comments focused on the woman needing to change something for some reason. One of the reasons was to enhance appearance and focused on a woman’s eating behaviors. For example, the woman may have been in the act of eating when given the comment and was told to eat less, given less food to eat, or made fun about how much food she ate. The comments in the appearance sub-category also included women being told that they were too fat (Muscat & Long, 2008). Another sub-theme that emerged was about the women’s performance. These women reported being told comments such as that they needed to lose weight to be a better athlete and to increase their athletic performance. Also, 4% indicated that they were given critical comments about their bodies with the aim being to improve their health. These comments appeared to be somewhat positive comments but were perceived as critical to the women. For example, the comments included nutritional advice, warnings about obesity, and information about the woman’s risk of developing a hereditary disorder relating to weight.

Another theme of the comments was the nature of the comment, meaning whether the comment was made publicly or privately. It was difficult for Muscat and Long (2008) to determine exactly how many of the comments were made publicly, but they estimated that approximately 70% of the comments were made in public, such as at dinner with one’s teammates. The third theme focused on the direction of the comment. For example, some of the women reported receiving indirect comments, such as indirect suggestions to lose weight. An example of an indirect comment was a swimmer was complimented when she lost weight.
The study by Muscat and Long (2008) found that the more severe or threatening a particular comment was, the greater the woman's level of disordered eating. They also found some evidence to suggest that the more athletically involved a woman was, the more likely she was to be able to recall critical comments. Furthermore, the researchers found that many of the critical comments came from multiple sources. They also reported that the study showed that the majority of the comments were made from family members, not coaches and trainers as was expected.

As previously stated, research has shown that parental, peer, and media influences contribute to men having real or perceived pressures to gain muscle or lose fat. Just as women with disordered eating habits can recall a critical comment made about their bodies, can men who display MD symptomotology recall critical comments made about their bodies? The present study aims to determine if men who report MD symptomotology recall critical comments that were made about their bodies.

**The Current Study**

The current study will extend on the present research about the possible effects of critical comments, as well as what is known about the development of MD. Although it has been previously reported that sociocultural influences have an effect on a person possibly developing this disorder, this study will more thoroughly examine social influences. The hypothesis of the current study is that men who can recall critical comments about their bodies will report experiencing more MD symptomotology than those who remembered no such comments. In addition, it is expected that out of those who recall critical comments, the more severe or threatening they remember the comment being, the more MD symptomotology they will report. Also, it is expected that men who
associate more negative emotions with the comment will have higher levels of reported MD symptomotology.
Methods

Participants

Participants in the current study were men recruited from undergraduate classes at Western Kentucky University. A total of 118 men completed the study. Ages of the participants ranged from 18 years to 39 years ($M = 19.95, SD = 3.67$). The sample was 82.2% Caucasian ($N = 82.2$), 7.6% African American ($N = 9$), 3.4% Asian American ($N = 4$), 0.8% Native-American ($N = 1$), 0.8% Hispanic ($N = 1$), and 0.8% Pacific Islander ($N = 1$). A total of 1.7% of the participants indicated that they were “biracial” ($N = 2$), and 1.7% of the sample reported “other” ethnicities ($N = 2$). The mean number of years of education for the sample was 13.63 ($SD = 0.91$). The men in this study had a mean self-reported height of 69.73 inches ($SD = 4.97$), and a mean self-reported weight of 175 pounds ($SD = 45.83$). The mean Body Mass Index (BMI) score of this study was 26.16 ($SD = 7.04$). The participants were asked to state whether or not they were involved in sports and to specify what type of sport in which they were involved. Flag football was the most popular sport, with 6.78% of the sample indicating they played flag football ($N = 8$), and 5.08% played soccer ($N = 6$). There were 3.39% of the sample who reported that they played basketball ($N = 4$), 3.39% of the sample reported they played football ($N = 4$), 2.54% of the sample reported they played lacrosse ($N = 3$), 2.54% of the sample reported they played softball ($N = 3$), 1.69% of the sample reported they were involved in martial arts ($N = 2$), 0.85% of the sample reported they were divers ($N = 1$), 0.85% of the sample reported they golfed ($N = 1$), 0.85% of the sample reported they played tennis ($N = 1$), 0.85% of the sample reported they played dodge ball ($N = 1$), 0.85% of the sample reported they were involved in track and field ($N = 1$), 0.85% of the sample reported they...
were involved in cross country ($N = 1$), 0.85% of the sample reported they played volleyball ($N = 1$), and 0.85% of the sample reported they played baseball ($N = 1$).

**Design**

The study used a quasi-experimental design. The independent variable was critical comments that were recalled. The dependent variable is the level of MD symptomotology that is reported.

**Measures**

**Demographics.** The participants were asked to complete a demographics section. Information received in this section was the participant’s age, ethnicity, level of education, athletic participation, and self-reported height and weight (see Appendix A).

**Muscle Dysmorphia Inventory.** Participants were asked to complete the Muscle Dysmorphia Inventory (MDI; Short, 2005; see Appendix B). The MDI is made up of 34 statements, such as “When I see my reflection in the mirror or window, I feel badly about my body size or shape,” and “I have difficulty maintaining relationships because of thoughts of my body.” The MDI measures variables including: a person’s level of body anxiety, compulsivity, and inappropriate eating habits. Response choices on the MDI are arranged on a six-point Likert-type scale from 1 (*never*) to 6 (*always*). Higher scores indicate higher levels of MD symptomotology. Past Cronbach’s Alpha for the MDI was calculated to be .87, indicating that the MDI has a high level of internal consistency (Short, 2005).

Due to a mechanical error when collecting the data used for analysis, items 4 through 12 on the MDI were not included in the present study. Cronbach’s Alpha for the
25-item MDI used for this study was .84, indicating that it still has high internal consistency.

**Social Hassles Questionnaire.** The participants were given the Social Hassles Questionnaire (SHQ; Muscat & Long, 2008) that was developed for a previous study (see Appendix C). The questionnaire examines critical comments that were made to individuals and their emotional response to the comments. It also assesses the source of the comment and the content of it. The original questionnaire was slightly modified to include an inquiry about whether a significant person has ever made a comment to the participant to increase exercising or attempt to increase his muscle mass. The SHQ is made up of 12 items, such as “Do you remember someone ever making a critical comment that your body should be a certain shape, weight, or that there was a need to gain muscle mass?” and “To what degree did you feel upset by the person’s comment about your body?” The SHQ also asks the participant to identify who made the critical comment. Cronbach’s Alpha for the SHQ was .90, indicating that it has excellent internal consistency.

In addition, participants were asked to evaluate the emotions that they felt after receiving the comments. They responded to a list of positive (relief, hope, love, gratitude, compassion, pride, and happiness) and negative (anger, anxiety, fright, guilt, shame, sadness, envy, and jealousy) emotions, and rated how much they experienced each emotion between 0 (*Not at all*) and 5 (*Extremely*). Cronbach’s Alpha for the negative emotion scale was found to be .91, and the Cronbach’s Alpha for the positive emotion scale was .95.
Procedures

After receiving Institutional Review Board approval, participants were recruited from undergraduate courses at Western Kentucky University. Students accessed an online data collection system that directed them to the current study. These men were asked to participate in a study being conducted by a graduate student. Participants were informed about what would take place and were given an Informed Consent Document (see Appendix D). After providing consent, the participants completed the questionnaire, which contained the demographics section, the SHQ, and the MDI. Debriefing occurred after the students completed the questionnaires (see Appendix E).
Results

The total score for the MDI was calculated by summing the participants’ responses. This yielded a mean score of 69.71 ($SD = 16.21$), with a range of 33 to 118. To determine how upset participants were following the comments, five questions from the SHQ (Question 5 through Question 9) were summed to create an upset score. This yielded a mean score of 9.15 ($SD = 3.95$), with a range of 5 to 20. The emotional reactions to the comments were evaluated by calculating the average score across both negative and positive emotions. The mean of the negative emotion score was 2.18 ($SD = 1.03$), with a range of 1 to 5; the mean of the positive emotion score was 1.95 ($SD = 1.09$), with a range of 1 to 4.57.

The first hypothesis under study stated that men who can recall critical comments about their bodies will report more MD symptomotology than those who remember no such comments. In the study, 59.32% of participants reported that they recalled a critical comment ($N = 70$), and 40.68% of the participants did not report recalling any comments ($N = 48$). An independent samples $t$-test showed no significant differences on MD symptoms between participants who recalled comments about their bodies ($M = 70.86$, $SD = 16.05$) and those who did not recall comments about their bodies ($M = 67.93$, $SD = 16.49$), $t(113) = -0.94, p = .35$.

The second hypothesis under study declared that out of the men who could recall a critical comment made about their bodies, the more upset they reported feeling about the comment, the higher the level of MD symptomotology that they will report. Correlational analyses were conducted to determine if there was a relationship between how threatened a participant reported feeling about the critical comment made about his
body and his current level of muscle dysmorphia symptomotology. A significant
correlation \((r = .43, N = 70, p < .001)\) was found between scores on the MDI and scores
on the SHQ measuring how threatened the person felt by the comment.

The third hypothesis under study stated that men who reported associating
negative emotions with the comment would report more MD symptoms. A correlational
analysis revealed that there was a significant relationship between associating negative
emotions with the critical comment and having higher levels of MD symptomotology \((r =
.53, N = 51, p < .001)\). No significant relationship was found between reporting feeling
positive emotions after receiving the critical comment and MD symptomotology \((r = .18,
N = 49, p = .22)\).

Of the 70 participants (59.32%) who reported that they could recall a critical
comment someone made about their bodies were asked to indicate who it was that made
the comment. Many of the participants listed more than one person who made the
particular comment; therefore, percentages do not equal 100%. Of the participants,
51.43% indicated that the person who made the comment was a friend \((N = 36)\), 27.14 %
indicated it was their coach \((N = 19)\), 14.29 % stated their girlfriends made the comment
\((N = 10)\), and 14.29% marked “other” \((N = 10)\). Participants who marked “other” were
asked to specify who it was that made the comment. Responses included cousins, aunts,
uncles, step-parents, siblings, grandparents, a prostitute, a military recruiter, and a
classmate. Also, 11.43 % stated that their mother made the comment \((N = 8)\), 10% listed
their fathers \((N = 7)\), 7.14% reported the critical comment was made by a teacher \((N = 5)\),
and 2.86% stated their boyfriends made the comment \((N = 2)\).
Finally, no significant correlation was found between how long ago the comment occurred and participants' current levels of MD symptoms ($r = - .02, N = 70, p = .88$). The relationship between how well a person remembered the comment and his level of MD symptomatology approached significance ($r = .22, N = 70, p = .07$).
Discussion

The purpose of the current study was to extend on the present research of the possible effects from receiving critical comments about one’s body. The study also expands on what is known about the development of MD. Although it has been previously reported that sociocultural influences have a demonstrable effect on a person developing this disorder (Jonda, 2007), this study more thoroughly examined the social pressures to have a certain body type that males experience and the effects of those pressures.

The first hypothesis under study stated that men who could recall critical comments about their bodies would report more MD symptomatology than those who remembered no such comments. Results of the study did not support this hypothesis. Men who recalled critical comments about their bodies did not reveal having a significantly higher level of MD symptomatology than those who did not recall such comments. Whereas women who could recall a critical comment made about their bodies reported higher levels of disordered eating (Muscat & Long, 2008), this was not found to be the case with men. It is possible that men are less sensitive to criticism about their bodies, and therefore, are less affected by such comments. Another possible reason as to why Muscat and Long’s (2008) study revealed significant results for this hypothesis and this one did not is that their study focused on athletes as opposed to women in the general population. If male athletes and sports participants had been studied, results may have been significant. It is likely that athletes and sports participants are more sensitive to criticism about their bodies because the shape that they are in affects their performance.
The second hypothesis under study postulated that, out of those who recall critical comments, the more severe or threatening they remember the comment being, the more MD symptomotology they would report. The results supported this hypothesis. Severity of recalled comments was positively correlated with MD symptoms. The study by Muscat and Long (2008) found that the more severe or threatening a particular comment was the greater the woman’s level of disordered eating. The same results were found with the male population in regards to MD symptoms. These results may indicate that men who feel threatened and upset about comments about their bodies exhibit MD symptoms to have some control. Whereas women are motivated by social comparison, these men may have more personal motivations.

The third hypothesis in the study was that men who associate the comment with feeling more negative emotions at the time would report more MD symptoms. The results supported the hypothesis. Muscat and Long (2008) found similar results. They found that the intensity of negative emotions, such as anxiety and shame, was greater than the intensity of positive emotions.

Results regarding the person who made the comment differed from Muscat and Long’s (2008) study. They expected that the majority of the critical comments that the women athletes and sport participants could recall would have been made by coaches and trainers. They found that the majority were actually made by family members. The present study yielded different results. Over half of the people who made the critical comments were friends of the participants. Coaches were identified as the second most, and girlfriends were named third.
An interesting finding from the present study is that there was no significant relationship between how long ago the comment was made and a person's current level of MD symptomatology, but there was a significant relationship between the how well a person could remember the comment and his current level of MD symptomatology. This is noteworthy because it implies that men who were the most disturbed by the comments remembered them the best, contributing to their current level of MD symptomatology. It is noteworthy that the percentage of male participants who recalled critical comments in this study was uniform with the percentage of female participants in Muscat and Long's (2008) study. In the previous study 58% of participants could recall a critical comment, whereas 59% recalled a comment in the present study. This indicates that men and women have equivalent experiences in terms of critical comments that receive about their bodies from significant others.

The findings of this study expand on Stice's (2002) research. In his study, it was stated that sociocultural factors work in collaboration with other factors to cause disordered eating. Supposed pressures from others to be thin combined with internalizing the thin ideal leads to body dissatisfaction, dieting, negative affect, and disordered eating behaviors (Stice, 2002). In addition, Stice (2002) indicated that social support can act as a protective factor and can actually alleviate the effects of the other factors, whereas perceived pressures to be thin intensifies the effects of the other factors along with thin ideal internalization and body dissatisfaction (Stice, 2002). Our findings support Stice's (2002) findings in that associating negative emotions with messages from significant people in the participants' lives positively correlated with their current muscle dysmorphia symptoms.
Limitations

Limitations of the present study should be considered. First, all of the men who participated in the study were college students who attend Western Kentucky University. There was little variability in the participants’ ages, races, and education levels. A study on a more diverse group of men would generate better generalizability. Also, the study that Muscat and Long (2008) conducted focused entirely on women who participated in sports or who were athletes. If the present study had focused only on athletes or if men had been recruited from fitness centers, the results of the first hypothesis may have been significant. In addition, all of the data was self-reported. When relying on self-reporting for data collection, there is concern that participants may under or over report (Schwarz, 1999). Additionally, poor recall of past critical comments may have also affected the results. It is likely that the participants received more critical comments about their bodies than they could remember or were willing to admit.

Future Directions

Future research should focus on comparing male athletes and non-athletes in regards to critical comments and levels of MD symptomatology. Research should focus on whether male athletes can recall more critical comments, just as Muscat and Long (2008) found that women athletes could recall critical comments more easily.

Also, it is noteworthy that the majority of the female athletes in Muscat and Long’s (2008) study reported their coaches and trainers as the people who made the critical comments about their bodies, but the men in the present study named coaches as the second highest group to make a critical comment. It is interesting that women named family first and men named friends first as the people who made the comments. Future
research should examine if family members are more critical of their female family members' bodies than they are of their male family members' bodies, or if men are simply just not as bothered by such comments as women are and consequently do not remember them. Also, it is worth mentioning that over half of the critical comments that were made to the men came from friends. Are males really more likely to be critical of their male friends' bodies, or are those the comments that were taken to heart the most?

Conclusion

Recent research has focused more on body dissatisfaction in men than it had previously. Muscle Dysmorphia is a disorder that is characterized by a person being preoccupied with his or her level of muscularity to a point that causes distress and impairment in social and occupational functioning (Pope et al., 1997). Grieve (2007) has proposed that several factors contribute to the development of MD. These factors are body dissatisfaction, body distortion, body mass, media influences, ideal body internalization, sports participation, low self-esteem, perfectionism, and negative affect. Other researchers have also proposed that sociocultural influences predict body dissatisfaction. Muscat and Long (2008) examined the relationship between criticism and disordered eating habits in women. Their research found that female athletes and sports participants who recalled critical comments that someone made about their bodies reported higher levels of disordered eating compared to those who could not recall critical comments. In addition, those who reported that the comment was more threatening reported greater disordered eating.

The current study examined the relationship between critical comments made to men and MD symptomatology. Analyses did not show a significant relationship between
higher levels of MD symptoms with the ability to recall critical comments; however, out of the men that recalled a critical comment, the more threatening or upset they reported being from the comment, the more MD symptoms they reported. Also, a significant relationship was found between associating negative emotions with the comment and higher levels of MD symptomatology. This research extends on what is known about the development of MD, and how criticism affects one’s level of body dissatisfaction.
References


Muscat, A. (2001). *Adolescent stress, coping resources, and the development of eating disordered behaviors*, Unpublished manuscript, University of British Colombia; Vancouver, B.C.


Appendix A

Demographics Survey
Demographics

Age __________

Ethnicity ________________

Gender: ___ Male

___ Female

Height ________________

Weight_______________

Education: ___ Freshman

___ Sophomore

___ Junior

___ Senior

___ Graduate

Are you involved in athletics? Please specify. __________________________
Appendix B

Muscle Dysmorphia Inventory
MDI MUSCLE DYSMORPHIA INVENTORY

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

<table>
<thead>
<tr>
<th>STRONGLY DISAGREE</th>
<th>SOMEWHAT DISAGREE</th>
<th>SLIGHTLY DISAGREE</th>
<th>SLIGHTLY AGREE</th>
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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

    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

17. I do not believe I am as muscular as others.
    1 2 3 4 5 6
<table>
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<tr>
<th>STRONGLY DISAGREE</th>
<th>SOMEWHAT DISAGREE</th>
<th>SLIGHTLY DISAGREE</th>
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</tbody>
</table>

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
Scoring: Items with an asterisk (*) in front of them should be reverse scored. Items for the individual subscales are as follows:

- **Body Anxiety:** Items 16, 29, & 30
- **Compulsivity:** Items 13, 32, & 34
- **Illusory Correlations:** Items 10 & 33 (NEW FACTOR)
- **Inadequacy:** Items 1, 4, 6, 25, & 27
- **Inappropriate Eating:** Items 3, 14, 28, & 31 (NEW FACTOR)
- **Increased Muscularity:** Items 18, 19, & 22
- **Muscularity Drive:** Items 12, 17, 21, & 24
- **Persistence:** Items 5, 8, 15
- **Preoccupation:** Items 7, 9, 23, & 26
- **Social Sacrifice:** Items 2, 11, & 20
Appendix C

Social Hassles Questionnaire
Social Hassles Questionnaire

We are interested in how people respond when they confront a difficult or stressful interpersonal event in their lives. There are lots of ways to deal with stress. The questionnaire asks you to indicate what you felt, when you experienced a difficult or stressful interpersonal event.

1. Do you remember someone ever making a critical comment that your body should be a certain shape, weight, or that there was a need to gain muscle mass? Please circle one.

   Yes or No

2. If you answered Yes to Question #1, please describe the situation below. If there was more than one situation, describe the most stressful one.

3. Identify the person from Question #1, who suggested you change your body shape, weight, to diet or increase your food intake. (Please circle the appropriate answer(s)).

   a. Friend
   b. Parent-Mom
   c. Parent- Dad
   d. Teacher
   e. Coach
   f. Boyfriend
   g. Girlfriend
   h. Partner
   i. Other ________________

4. To what degree did the comment about your body have an impact on your behavior/attitude towards your body? (Circle one please).

   1 = no impact at all
   2 = a little bit of impact
   3 = quite a bit of impact
   4 = a lot of impact
5. To what degree did you feel upset by the person's comment about your body? (Circle one please).

1 = not at all upset
2 = a little bit upset
3 = quite a bit upset
4 = very upset

6. To what degree do you feel the comment made by this person about your body has had an impact on how conscious you are about your body shape, diet, or need to change your weight? (Circle one please).

1 = not at all conscious
2 = a little bit conscious
3 = quite a bit conscious
4 = very conscious

7. To what degree did you feel the comment made by this person about your body has resulted in you attempting to make changes to your body? (Circle one please).

1 = no changes at all attempted
2 = a little bit of change attempted
3 = quite a bit of change attempted
4 = definitely attempted a lot of changes

8. To what degree did you feel your self-esteem was threatened by the comment about your body shape, diet, or need to change your weight? (Circle one please).

1 = Not threatened at all
2 = Felt a little threatened
3 = Felt somewhat threatened
4 = Felt very threatened

9. To what degree did you feel you had failed the person's expectations when you heard the person comment about your body shape, or need increase muscle mass? (Circle one please).

1 = Did not feel like I failed
2 = Felt a little bit like I failed
3 = Felt somewhat like I failed
4 = Felt like a failure
10. The scale consists of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to the word. Indicate to what extent you felt the emotion in reaction to the comment made about your body? Please write a number beside each word.

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<tbody>
<tr>
<td></td>
<td>Very slightly</td>
<td>A little</td>
<td>Moderately</td>
<td>Quite a bit</td>
<td>Extremely</td>
<td>Not at All</td>
</tr>
</tbody>
</table>

____ Anger    ____ Sadness    ____ Relief
____ Anxiety  ____ Envy       ____ Hope
____ Fright   ____ Jealousy  ____ Love
____ Guilt    ____ Happiness  ____ Gratitude
____ Shame    ____ Pride      ____ Compassion
____ Other feeling? (please describe)

11. How long ago did the stressful comment about your body occur? (Please circle one).

- Past 6 months
- 1 year ago
- 2 years ago
- 3 years ago
- 4 years ago
- 5 years ago
- 6 years ago
- 7 years ago
- 8 years ago
- 9 years ago
- 10 years ago
- 11 years ago
- 12 years ago
- 13 years ago
- 14 years ago
- 15+ years ago

12. How well do you remember the comment about your body? (Circle one please).

1 = quite vague
2 = remember parts of the event
3 = fairly clear in my mind
4 = remember the event very clearly (as if it happened yesterday)
13. Can you remember any other critical comments that someone made about your body?
(Please Circle One.)

Yes or No

If yes, approximately how many comments can you recall?
Appendix D

Informed Consent Document
Informed Consent

You are being asked to participate in a survey research project. Before verbally giving your permission to participate we would like to explain the following.

1. Your participation is completely voluntary. This means you have the right to not answer any question you do not want to, or to quit at any time without any penalty.
2. For this study, you will remain completely anonymous. That is, you will not be asked to write down any identifying information, such as your name.
3. This study appears to have minimal risks and discomfort. However, there is always a chance that a question could cause discomfort or problems. Please let the researchers know if any questions are upsetting.
4. Benefits of this study include a sense of well being for contributing to scientific research, helping a WKU graduate student, and providing information that will be used to help better understand male body image.
5. During participation you will be asked to complete a section asking for about age, ethnicity, height, and weight. Also, you will be asked to complete two short measures (34 items, 12 items) that evaluate critical comments that others may have made about your body and your dieting and exercise habits. This survey should take about 10-15 minutes to complete.
6. Although your individual responses will remain anonymous, your data will be combined with the data of others and may be submitted for publication in scholarly journals or presented at conventions.

Dr. Rick Grieve, Ph.D., is the Faculty Sponsor for this research project and can be contacted at (270) 745-4417, with any questions in regards to the study, Monday through Friday from 9:00 am until 4:00 pm. Dr. Grieve’s office is located in Tate Page Hall room 258. Questions or complaints about research participants’ rights can be directed to the Human Subjects Review Board, Western Kentucky University, Bowling Green, KY 42101, or by phone at (207)745-4652.
Appendix E
Debriefing
Debriefing

Thank you for participating in this survey. The purpose of the study was to examine the relationship between criticism and symptoms of muscle dysmorphia. If you have any questions regarding the research, please contact Dr. Rick Grieve, Ph.D., the Faculty Sponsor for this research project, at (270) 745-4417, Monday through Friday from 9:00 am until 4:00 pm. He can also be reached via e-mail at rick.grieve@wku.edu. Dr. Grieve’s office is located in Tate Page Hall, Room 258. If you would like a copy of this research, please let Dr. Grieve know; copies will be available after January 15, 2010.