

# Muscle Dysmorphia, Self-esteem, and Loneliness among Gay and Bisexual Men

MICHAEL P. CHANEY  
Oakland University, USA

Although past research indicates gay and bisexual men are more concerned with muscularity than their heterosexual counterparts, studies investigating psychosocial factors contributing to muscle dysmorphia (MD) among gay and bisexual men are limited. The purpose of this study was to examine the relationship between self-esteem, loneliness, and MD among gay and bisexual men. Participants ( $N = 304$ ) completed the Muscle Appearance Satisfaction Scale (MASS), Rosenberg Self-esteem Scale (RSES), and UCLA Loneliness Scale (ULS-version 3). A relationship among self-esteem, loneliness, and MD was found. Gay and bisexual men who reported more symptoms of MD also reported lower self-esteem and increased feelings of loneliness, than men who reported fewer MD symptoms. Psychological and environmental variables associated with gay and bisexual men are explored to help explain these results. Implications for future MD research among other oppressed populations also are discussed.

*Keywords:* muscle dysmorphia, self-esteem, loneliness, gay men, bisexual men, quantitative study

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Body image dissatisfaction has typically been associated with girls and women. However, helping professionals are seeing an increased number of male clients who describe extreme body dissatisfaction. For example, many men report wanting to be more muscular (Vartanian, Giant, & Passino, 2001). This might be attributed to the use of muscular, male bodies in advertising, television, and movies. Additionally, Pope, Olivardia, Gruber, and Borowiecki (1999) found children's action figures perpetuate a muscular male ideal. Studies (Mintz & Betz, 1986) to 28 (Pope, Phillips, & Olivardia, 2000) suggest men desire to gain approximately 17 pounds of muscle mass. Although wanting to be more muscular is not necessarily an unhealthy desire, for some men the desire becomes a pathological preoccupation.

Michael P. Chaney, Department of Counseling, Oakland University.

Correspondence concerning this article should be addressed to Michael P. Chaney, Ph.D., LPC, Department of Counseling, 440B Pawley Hall, Oakland University, Rochester, MI 48309-4494. Electronic mail: chaney@oakland.edu

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Although the precise number of men with muscle dysmorphia (MD) is unknown, one study found 9.3 percent of male participants reported MD (Pope, Gruber, Choi, Olivardia, & Phillips, 1997). Olivardia, Pope, and Hudson (2000) suggest the age of onset of MD to be approximately 19.4 years old. Theorized as a subtype of body dysmorphic disorder (BDD), MD is characterized by a preoccupation with muscularity that causes clinically significant impairment in social, occupational, or other areas of functioning (Pope et al., 1997). Individuals with MD may exhibit behavioral symptoms such as (1) avoiding situations where their bodies are exposed (Choi, Pope, Olivardia, & Cash, 2002), (2) continuing to work out, diet, use steroids or other workout supplements despite negative physical or psychological effects, (3) lifting weights compulsively, (4) excessively comparing one's body to other male bodies, (5) looking for reassurance about one's body from others (Pope, Gruber et al.), and (6) mirror-checking behaviors (Olivardia et al., 2000).

Empirical research exploring the psychological consequences of MD is limited, but increasing. Maida and Armstrong (2005) found that MD has a strong relationship to Obsessive Compulsive Disorder (OCD). Additionally, they reported a moderate relationship between MD and perfectionism. Some men with MD experience anxiety due to side effects associated with the use of anabolic-androgenic steroids (Pope & Katz, 1994) and ephedrine-based products (Rawson & Clarkson, 2002). Studies also have found MD to be related to depression (Olivardia, Pope, Borowiecki, & Cohane, 2004), and past suicide attempts and substance use disorders (Pope, Pope, Menard, Fay, Olivardia, & Phillips, 2005). However, more research is needed to determine the adverse physical and psychological consequences of MD, as well as who is most likely to be affected by MD.

### Gay Men and Body Image

Research on body image concerns among gay men is conflicting. Numerous studies reported gay men are more dissatisfied with their bodies than heterosexual men (Beren, Hayden, Wilfley, & Grilo, 1996; Herzog, Newman, & Warshaw, 1991; Kaminski, Chapman, Haynes, & Own, 2005; Lakkis, Ricciardelli, & Williams, 1999; Morrison, Morrison, & Sager, 2004; Russell & Keel, 2002; Siever, 1994; Silberstein, Mishkind, Striegel-Moore, Timko, & Rodin, 1989; Strong, Singh, & Randall, 2000; Strong, Williamson, Netemeyer, & Geer, 2000). Other studies have found no significant differences between heterosexual men and gay men on measures of body image satisfaction (Hausmann, Mangweth, Walch, Rupp, & Pope, 2004), body size perception (Dillon, Copeland, & Peters, 1999), and drive for muscularity (Duggan & McCreary, 2004). For many gay men, though, they seem to desire to become more muscular. For many, the ideal gay body is one comprised of increased muscle mass and low body fat (Kaminski et al.; Levesque & Vichesky, 2006; Yelland & Tiggeman, 2003). The internal and external pressure to be lean and muscular causes many gay and bisexual men to attempt to achieve this ideal body at any cost. For example, one study found that gay and bisexual men are more likely than heterosexual men to use anabolic-andro-

genic steroids to transform their bodies and improve their appearance (Dillon et al., 1999). Possible explanations as to why many gay and bisexual men engage in extreme body alteration strategies and report significant muscle dissatisfaction include the influence of the media, gay and bisexual cultural norms, and heterosexism.

### *Media*

The media's effect on striving for muscularity among gay men has received a great deal of attention in the literature. Some authors have proposed that the media are directly responsible for the increase in muscle dissatisfaction among men in general (Leit, Gray, & Pope, 2002). A number of gay and bisexual men might be influenced by mainstream men's fashion and exercise magazines. Recent studies have found that male body image is negatively affected when exposed to magazines and photographs of muscular men (Baird & Grieve, 2006; Duggan & McCreary, 2004). Research also has shown that brief and few exposures to muscular male advertisements affect men's body image (Lorenzen, Grieve, & Thomas, 2004).

In addition to exposure to magazines and advertisements, some men access the Internet to view sexually explicit websites (Chaney & Chang, 2005). Gay men who view online pornography are at increased risk for developing anxiety about their bodies (Duggan & McCreary, 2004). The results of these studies demonstrate a relationship between media influence and gay and bisexual muscularity dissatisfaction. Other influences that negatively affect gay and bisexual male body image are the shared cultural values of these communities.

### *Gay Cultural Values*

A few common gay cultural themes may contribute to many individuals wanting to be more lean and muscular. First, there is the value placed on physical appearance among some members of the gay community (Siever, 1994; Silberstein et al., 1989). This is likely due to a many gay and bisexual men wanting to attract potential sex partners (Drummond, 2005). Although heterosexual men might also be concerned about physical appearance to attract sexual partners, it is likely that the need to attract sex partners is minimized once some heterosexual men choose to marry. A second theme often seen within the gay community is not wanting to appear emaciated or too thin because of the stigma associated with HIV/AIDS (Mann, 1998). Similarly, some gay and bisexual men may believe that by achieving muscular bodies, they may appear younger. Thus, they may perceive themselves as more attractive to potential partners. More research is needed, however, that qualitatively assesses other cultural values among gay and bisexual men that may influence the development of body image disturbance. An additional construct that may foster muscularity concerns among gay and bisexual men is heterosexism.

*Heterosexism and Homonegativity*

Heterosexism and homonegativity might also factor into muscle dissatisfaction among gay and bisexual men. Homonegativity in the form of anti-gay physical attacks has been significantly associated with body image dissatisfaction and masculine body ideal distress among men (Kimmel & Mahalik, 2005). Other researchers have reported that the teasing and bullying that many gay boys experience may be a direct cause of negative body image in adulthood (Pope, Phillips et al., 2000; Strong, Singh et al., 2000). One possible explanation is that the childhood trauma associated with being bullied for being gay or even perceived to be gay leads some adult gay men to feel the need to develop strong bodies to protect themselves or to be viewed as masculine. In fact, among gay men, muscularity has been found to be associated with masculinity (Halkitis, Green, & Wilton, 2004), and power and dominance (Drummond, 2003). Masculinity, power, and dominance are traditionally associated with heterosexual men. Therefore, it is possible that some gay men diagnosed with MD have internalized these characteristics so as not to be perceived as gay. This is consistent with DiCarlo's (2001) proposal that a muscular body alters the perception of appearing effeminate and weak. Still, further empirical examination of how heterosexism might contribute to body dissatisfaction among non-heterosexual males is needed.

In summary, the literature has reported that media, cultural norms and heterosexism contribute to dissatisfaction with one's muscularity among gay and bisexual men. In order for mental health professionals to effectively treat gay and bisexual men with this concern, they should understand the adverse psychological consequences of muscle dissatisfaction. Diminished self-esteem and feelings of loneliness are two potential effects of dissatisfaction about one's muscularity that are worthy of investigation.

*Self-esteem*

A large body of research has explored the relationship between self-esteem and muscularity dissatisfaction in males. For example, the drive for muscularity has been found to be related to lower global self-esteem (McCreary & Sasse, 2000; Riccardelli & McCabe, 2001) and appearance-related self-esteem (Morrison, Morrison, Hopkins, & Rowan, 2004). In another study, Olivardia et al. (2004) reported self-esteem to be significantly negatively correlated with muscularity belittlement, overall body dissatisfaction, and muscularity displeasure. These results are inconsistent with research that did not find lower self-esteem among college-aged weightlifters who exhibited symptoms of MD (Muller, Dennis, Schneider, & Joyner, 2004). Though the aforementioned studies are pertinent, sexual orientation was not assessed or participants were heterosexual. Thus, the results cannot be generalized to gay and bisexual men.

Among gay men, low self-esteem has been found to be significantly associated with overall body dissatisfaction (Beren et al., 1996; Levesque & Vichesky, 2006; Russell & Keel, 2002; Williamson & Hartley, 1998). On the other hand, Silberstein et al. (1989) reported that a gay man's self-esteem is not affected by the discrepancy between

his perceived and ideal body. In a study examining self-esteem and exercise, no significant differences were found in measures of self-esteem among bodybuilders and non-exercisers (Boroughs & Thompson, 2002). Although most studies reported relationships between self-esteem and muscularity concerns among gay men, a gap exists in the literature pertaining to self-esteem and MD specifically.

In their ground-breaking book, *The Adonis Complex*, Pope, Phillips et al. (2000) wrote that some men with MD report that their muscularity drives their level of self-esteem. Lantz, Rhea, and Mayhew (2001) developed a theoretical model with proposed connections between MD and self-esteem. However, a connection between MD and self-esteem was not found (Muller et al., 2004). Further investigation into the relationship between MD and self-esteem is needed.

An additional variable that has been overlooked in the MD literature is loneliness.

### *Loneliness*

There are two possible ways loneliness might be related to MD. First, some gay and bisexual men who are at risk for MD experience feelings of loneliness prior to the development of symptoms of MD. Some men might join gyms to decrease the feelings of loneliness, which is consistent with research showing that individuals who exercise several times per week score lower on measures of loneliness than individuals who do not exercise or exercise infrequently (Page & Hammermeister, 1995). In this way, the gym might be utilized for social networking. It is possible that, after a period of time, some men start comparing their bodies to other gym attendees. As research shows, men who have been exposed to advertisements of muscular bodies often feel more dissatisfied with their bodies (Lorenzen et al., 2004). It seems plausible that the same effect could occur when men are exposed to muscular bodies while at the gym. Due to many gay men already experiencing feelings of inadequacy and shame because of their sexual orientation, they might be more influenced by visual cues of muscularity. This hypothesis concurs with the work of Kassel and Franko (2000) who suggest that because many gay men experience isolation, rejection, and a lack of connectedness in youth, these individuals might feel inadequate and defective as gay adults, which may lead to body image disturbances.

The second way loneliness might be related to MD is as a negative consequence of the condition. Lantz et al. (2001) hypothesized that individuals with MD may spend as many as six hours per day in the gym, often causing friends to be driven away. Additionally, individuals with MD often give up social gatherings with friends and family, so that workouts are not missed (Olivardia et al., 2000). Although not yet empirically explored, the social alienation associated with MD is likely to lead to intense feelings of loneliness.

The purpose of this study was to investigate the relationship of self-esteem, loneliness, and MD among three categories of gay and bisexual men: men who report low symptoms, moderate symptoms, and high symptoms of MD. The current study answers calls from other researchers who have requested MD research specifically among gay

populations (Kaminski et al., 2005) that utilizes populations outside academic environments (Morrison, Morrison, Hopkins et al., 2004). Moreover, Yelland and Tiggeman (2003) suggested further investigation is needed related to self-esteem and muscularity concerns among gay men.

The following research questions were generated:

1. Is there a relationship between low self-esteem, loneliness, and muscle dysmorphia?
2. Are there differences in self-esteem and loneliness among gay and bisexual men who report low symptoms, moderate symptoms, and high symptoms of muscle dysmorphia?

I hypothesized that (1) low self-esteem and loneliness would be correlated to MD, (2) lower self-esteem and increased loneliness would correlate with more symptoms of MD, and (3) gay and bisexual men at each MD symptom level would have significantly different levels of self-esteem and loneliness.

## Method

### *Participants and Procedure*

Questionnaires were collected from 314 participants. A total of 10 questionnaires were discarded from data analysis because six were from heterosexual males and four were incomplete, resulting in 304 adult male volunteers. The mean age of the total sample was 34.28 years (median = 34.00 years) and ranged from 18-63 years. Participants included 257 Caucasian men (84.5 percent), 21 African-American men (6.9 percent), 12 Hispanic men (3.9 percent), 3 American Indian/Native American men (1.0 percent), 2 Asian-American men (0.7 percent), and 9 men who identified as “other” (2.9 percent). Participants self-identified as gay (N = 290; 95.4 percent) and bisexual (N = 14; 4.6 percent).

Regarding relationship status, participants reported being single (not dating) (N = 136; 44.7 percent), partnered (N = 106; 34.9 percent), dating (not partnered) (N = 55; 18.1 percent), and other (N = 7; 2.3 percent). Participants’ educational backgrounds included completing trade or high school (N = 65; 21.4 percent), associate’s degrees (N = 43; 14.1 percent), bachelor’s degrees (N = 116; 38.2 percent), master’s degrees (N = 50; 16.4 percent), doctoral degrees (N = 18; 5.9 percent), and other (N = 12; 3.9 percent). The median income range reported was \$20,001-\$40,000.

Questionnaires were distributed at a gay pride festival in a large, southeastern, metropolitan city. A booth, displaying clipboards with informed consent forms and questionnaires attached was set up. As male attendees walked passed the booth, they were invited by the investigator to participate in the research study. No incentives were provided to participants. All respondents gave written consent before participating. Participants were able to sit at a table while answering the questionnaires, which took ap-

proximately 15 minutes to complete. Participants were informed they could withdraw from the study at anytime. Procedures and design were given approval by an Institutional Review Board.

### *Instrumentation*

*Muscle Appearance Satisfaction Scale (MASS)*. The MASS is a 19-item multidimensional self-report measure for assessing the cognitive, behavioral and affective domains of muscle dysmorphia (Mayville, Williamson, White, Netemeyer, & Drab, 2002). The MASS was originally created using a 7-point Likert scale. In the current study, participants responded to a 5-point Likert scale ranging from 1 (definitely disagree) to 5 (definitely agree) because 5-point rating scales have been shown to provide high-quality data with few malfunctions, whereas 7-point scales are most prone to malfunctions (Jamieson, 2004; McDonald, 2004). A higher total score is consistent with increased symptoms of muscle dysmorphia.

Mayville et al. (2002) delineated five subscales associated with the MASS. The first factor, Bodybuilding Dependence, refers to excessive and compulsive weightlifting. The second factor, Muscle Checking, is associated with seeking reassurance from others about muscularity and mirror-checking to assess one's muscularity. The third factor, Substance Use, is characterized by one's willingness to use steroids or other dangerous means to gain muscle mass. The fourth factor, Injury, is related to overtraining and unsafe weightlifting activity. The last factor, Muscle Satisfaction, is related to the individual's satisfaction with personal muscle size and definition. The MASS and its subscales have acceptable internal consistency with alpha coefficients ranging from .73 to .82 and 2-week test-retest reliability with coefficients ranging from .76 to .89 (Mayville et al., 2002). Construct validity of the instrument has been established by its significant positive correlations with other measures of body dysmorphic symptoms (Mayville et al., 2002). Internal consistency of the overall MASS with the current research sample was good ( $\alpha = .88$ ).

*Rosenberg Self-esteem Scale (RSES)*. The RSES is a 10-item measure of global self-esteem (Rosenberg, 1965). Participants respond to a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Scores range from 10-40 with high total scores indicating higher self-esteem. The RSES contains an equal number of positively and negatively worded items. Sample items include "I feel that I have a number of good qualities," "I take a positive attitude toward myself," and "I certainly feel useless at times." Silber and Tippett (1965) reported a 2-week test-retest correlation of .85 for the scale. Construct validity has been demonstrated by the instrument's correlation with theoretical constructs related to self-esteem (Rosenberg, 1965). Internal consistency for the RSES in the current study was good ( $\alpha = .87$ ).

*UCLA Loneliness Scale (ULS, version 3)*. The ULS is a 20-item questionnaire used to assess the degree of loneliness experienced by individuals (Russell, 1996). Participants respond to a 4-point Likert scale ranging from 1 (never) to 4 (always). A higher total score is consistent with increased loneliness. Sample items are "How often do you

feel that you lack companionship,” “How often do you feel part of a group of friends,” and “How often do you feel isolated from others.” High reliability for the ULS ( $\alpha = .89$  to  $.94$ ) and test-retest reliability over a 12 month period ( $\alpha = .73$ ) have been reported (Russell, 1996). Convergent validity of the scale has been established by its significant positive correlations with other measures of loneliness. The ULS has been significantly correlated to self-esteem and depression. Internal consistency for the ULS in the current study was high ( $\alpha = .91$ ).

## Results

The mean for the total sample on the MASS was 43.10 ( $SD = 12.94$ ). To determine degree of MD symptomology among the current sample, quartiles (25<sup>th</sup> and 75<sup>th</sup> percentiles) were identified. Participants who scored 52 or greater (75<sup>th</sup> percentile) ( $N = 55$ , 18.1 percent) on the MASS were considered as reporting high symptoms, and individuals who scored 32 or less (25<sup>th</sup> percentile) ( $N = 56$ , 18.4 percent) were in the low symptom group. Men who scored between the 25<sup>th</sup> and 75<sup>th</sup> percentiles ( $N = 193$ , 63.5 percent) comprised the moderate symptoms group.

### *Research Question 1*

Pearson correlations were used to answer research question 1. MD was found to be negatively correlated with self-esteem ( $r = -.30$ ,  $p < .01$ ) and positively correlated with loneliness ( $r = .22$ ,  $p < .01$ ). According to traditional criteria these correlations represent small (.10) to medium (.30) effect sizes (Cohen, 1988). Self-esteem also was found to be negatively correlated with loneliness ( $r = -.55$ ,  $p < .01$ ). This represents a large effect size (Cohen).

### *Research Question 2*

One-way between-subjects multiple analysis of variance (MANOVA) was conducted on two dependent variables (self-esteem and loneliness). The independent variable was MD with three classifications of participants: low symptoms, moderate symptoms, and high symptoms (as delineated by the MASS). MANOVA,  $F(4, 602) = 6.86$ ,  $p < .001$ , indicated that there were significant differences among the three groups. Significant differences were found in MD and self-esteem,  $F(2, 303) = 13.64$ ,  $p < .001$ , and loneliness,  $F(2, 303) = 7.01$ ,  $p = .001$  (see Table 1).

Follow-up Tukey HSD multiple comparison tests indicated that men who reported high symptoms of MD also reported significantly lower self-esteem compared to men who reported moderate ( $p = .01$ ) and low ( $p < .001$ ) MD symptoms. Additionally, men in the moderate symptoms group reported lower self-esteem than men in the low symptoms group ( $p < .001$ ). Post hoc analysis also indicated that gay and bisexual men in the moderate and high symptoms groups experience significantly more feelings of loneliness than men in the low symptoms group ( $p < .001$ ); however, there were no signif-

Table 1  
*Self-esteem and Loneliness by Muscle Dysmorphia Group Assignment*

Variable	Low ( <i>n</i> = 56) <i>M</i> ( <i>SD</i> )	Moderate ( <i>n</i> = 193) <i>M</i> ( <i>SD</i> )	High ( <i>n</i> = 55) <i>M</i> ( <i>SD</i> )	<i>F</i>
Self-esteem	35.83 (4.20)	33.15 (4.97)	31.05(5.02)	13.64 (2,303)*
Loneliness	39.19 (9.80)	42.78 (9.74)	46.09 (9.55)	7.01(2,303)**

\*  $p < .001$ . \*\*  $p = .001$ .

ificant differences in loneliness among men in the moderate and high symptoms groups ( $p > .05$ ).

## Discussion

Although previous research has not formally examined the relationship between self-esteem and MD using a MD-specific instrument, past-studies involving gay and bisexual men have demonstrated that self-esteem is negatively affected by concerns about muscularity (Olivardia et al., 2004; Yelland & Tiggeman, 2003). In this study, it was hypothesized that self-esteem and loneliness would be related to MD among gay and bisexual men. The results confirmed the first hypothesis that a relationship exists among MD, self-esteem, and loneliness. It also was hypothesized that gay and bisexual men with more symptoms of MD would report lower self-esteem and increased feelings of loneliness than men who reported fewer symptoms. The results revealed that the more symptoms of MD are experienced among gay and bisexual men, the more self-esteem is compromised and feelings of loneliness are elevated.

These findings do not reveal whether or not low self-esteem and feelings of loneliness are precursors to or negative consequences of MD. It is likely dependent upon the individual. Some gay and bisexual men may feel a general sense of inadequacy due to growing up with an awareness of same-gender attractions and internalizing negative messages associated with a gay or bisexual identity. This idea concurs with Kassel and Franko's (2000) theory that pre-gay boys develop into young adults with damaged self-esteem. An overall feeling of inadequacy may lead some men to isolate themselves, leading to loneliness. Of these men, some may consciously or unconsciously decide to start developing muscular bodies to overcome a perceived sense of inferiority.

On the other hand, low self-esteem and loneliness might be side effects of MD. It is possible that some men experience low self-esteem and loneliness after MD develops due to self-objectification and being objectified by others. Because many gay and bisexual men with MD are likely to have muscular bodies, they are likely to be objectified and sexualized by others. Being perceived as an object of sexual conquest may have a dehumanizing effect, thereby leading to lowered self-esteem. Another way self-

esteem might be negatively affected by MD is due to the compulsive behavior associated with MD. Because most men are socialized to be in control of their lives, some men may feel inadequate for not being able to control the symptoms associated with MD, thus leading to poor self-esteem.

It makes sense that participants with greater symptoms of MD also report increased feelings of loneliness. Past research suggested that MD causes individuals to spend several hours per day in the gym, resulting in social alienation (Lantz et al., 2001), and consequently their relationships with friends, family, and significant others may suffer (Olivardia et al., 2000). The current study is the first to empirically examine the relationship among loneliness and MD. These findings provide further understanding of specific psychosocial factors that might contribute to the development of MD. Although these findings add to the existing body of MD research, some limitations exist.

Although efforts were made to obtain a diverse sample of gay and bisexual males, participants in this study predominantly identified as gay and Caucasian. Though the number of bisexuals in this study (4.6 percent) exceeds the National Center for Health Statistics (2002) reported 2 percent of bisexual men in the general population, the inclusion of a small sample of bisexuals is a limitation. Because bisexual men are often excluded from MD literature, I opted to include them. Future research questions might be generated by the inclusion of the bisexual males in this study. Caution should be exercised if attempting to generalize these findings to all gay and bisexual men with MD though.

Another possible limitation is the use of the MASS (Mayville et al., 2002). Although, the range of MASS scores in this study (mean = 43.10; SD = 12.94) and Mayville and colleagues' study (mean = 40.40; SD = 11.56) (personal communication, April 2, 2006) appear similar, it should be remembered that a 5-point Likert scale was used in the current study, whereas Mayville et al. used a 7-point Likert scale. If MASS scores in the current study were recoded using a 7-point Likert scale, the mean for the current sample would be approximately 57, which is significantly higher than the normative samples' mean score. Thus, this sample of gay and bisexual males reported higher than average symptoms of MD, compared to the Mayville et al. (2002) sample of 249 male, undergraduate students.

The findings reported here support the idea that gay and bisexual men may be more susceptible to MD compared to heterosexual men; however, further research is needed to confirm this. In addition recommendations for specific cut-off scores for categorization purposes were not suggested by Mayville et al. (2002). As a result, some participants in the current study may have been miscategorized by the use of quartiles. This potentially explains the statistically insignificant results between loneliness scores among men who reported moderate and high MD symptoms. In addition, although the MASS has been found to be reliable and valid, it has been used in only two previous empirical studies (Cafri, van den Berg, & Thompson, 2006; Mayville et al.). Further examination of the psychometric properties of the MASS is needed. Finally, use of the MASS with a non-heterosexual sample is another potential limitation. The MASS may not take into account cultural norms of the gay and bisexual male communities that

potentially affect the validity of the findings. Future research might explore the cultural sensitivity of the MASS for use with oppressed populations.

Other areas deserving empirical attention are the prevalence rates of MD among gay and bisexual men in general, and among gay and bisexual men of color specifically. Exploring the experiences of men of color who struggle with MD is needed, so that culturally sensitive treatment strategies might be developed. Men of color are often underrepresented in the body dissatisfaction literature, and future research is needed that explores how the convergence of race, sexual orientation, and poor self-esteem may put men with multiple stigmatized identities at greater risk for developing MD. Finally, MD assessments are needed that take into account cultural norms of gay and bisexual male communities, as well as measures that consider the effects of heterosexism and homonegativity on gay and bisexual male body image.

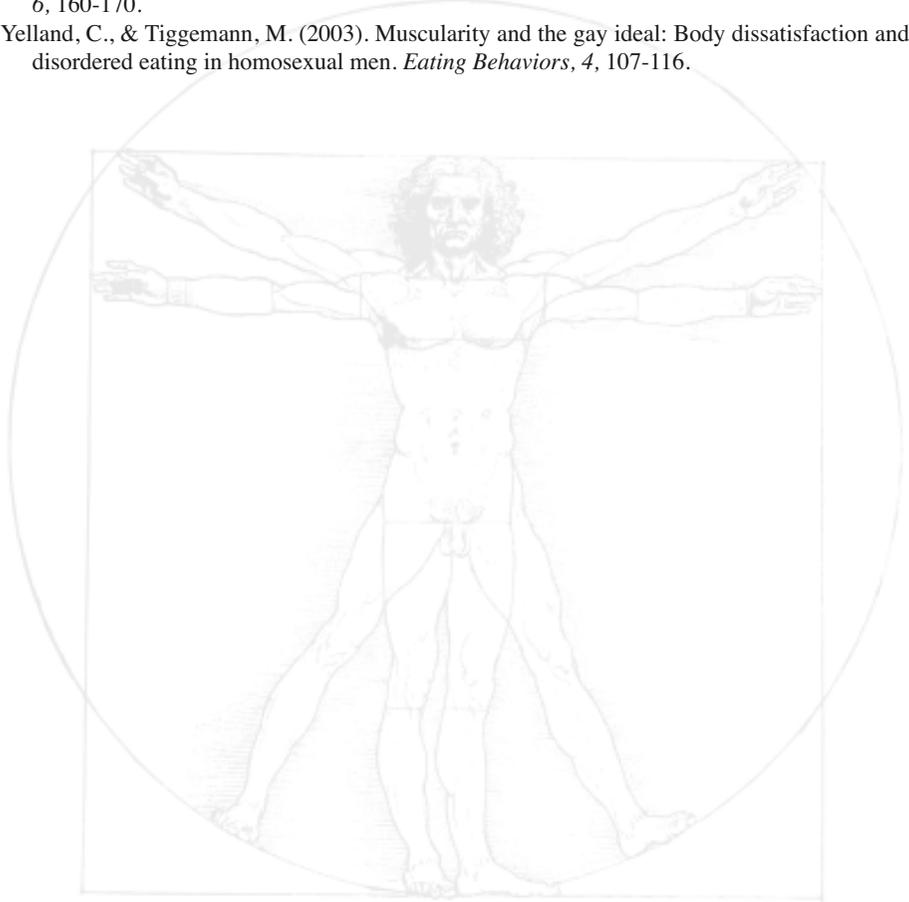
### References

- Baird, A. L., & Grieve, F. G. (2006). Exposure to male models in advertisements leads to a decrease in men's body satisfaction. *North American Journal of Psychology*, *8*, 115-122.
- Beren, S. E., Hayden, H. A., Wilfley, D. E., & Grilo, C. M. (1996). The influence of sexual orientation on body dissatisfaction in adult men and women. *International Journal of Eating Disorders*, *20*, 135-141.
- Boroughs, M., & Thompson, J. K. (2002). Exercise status and sexual orientation as moderators of body image disturbance and eating disorders in males. *International Journal of Eating Disorders*, *31*, 307-311.
- Cafri, G., van den Berg, P., & Thompson, J. K. (2006). Pursuit of muscularity in adolescent boys: Relations among biopsychosocial variables and clinical outcomes. *Journal of Clinical Child and Adolescent Psychology*, *35*, 283-291.
- Chaney, M. P., & Chang, C. Y. (2005). A trio of turmoil for Internet sexually addicted men who have sex with men: Boredom proneness, social connectedness, and dissociation. *Sexual Addiction & Compulsivity: The Journal of Treatment & Prevention*, *12*, 3-18.
- Choi, P. Y. L., Pope, H. G., Olivardia, R., & Cash, T. F. (2002). Muscle dysmorphia: A new syndrome in weightlifters. *British Journal of Sports Medicine*, *36*, 375-377.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2<sup>nd</sup> ed.). Hillsdale, NJ: Erlbaum.
- DiCarlo, J. (2001). The gym body and heroic myth. *Gay & Lesbian Review Worldwide*, *8*, 14-16.
- Dillon, P., Copeland, J., & Peters, R. (1999). Exploring the relationship between male homo/bisexuality, body image and steroid use. *Culture, Health, & Sexuality*, *1*, 317-327.
- Drummond, M. J. N. (2003). Retired men, retired bodies. *International Journal of Men's Health*, *2*, 183-199.
- Drummond, M. J. N. (2005). Men's bodies: Listening to the voices of young gay men. *Men and Masculinities*, *7*, 270-290.
- Duggan, S. J., & McCreary, D. R. (2004). Body image, eating disorders, and the drive for muscularity in gay and heterosexual men: The influence of media images. *Journal of Homosexuality*, *47*, 45-58.

- Halkitis, P. N., Green, K. A., & Wilton, L. (2004). Masculinity, body image, and sexual behavior in HIV-seropositive gay men: A two-phase formative behavioral investigation using the Internet. *International Journal of Men's Health, 3*, 27-42.
- Hausman, A., Mangweth, B., Walch, T., Rupp, C. I., & Pope, H. G. (2004). Body-image dissatisfaction in gay versus heterosexual men: Is there really a difference? *Journal of Clinical Psychiatry, 65*, 1555-1558.
- Herzog, D. B., Newman, K. L., & Warshaw, M. (1991). Body image dissatisfaction in homosexual and heterosexual males. *The Journal of Nervous and Mental Diseases, 179*, 356-359.
- Jamieson, S. (2004). Likert scales: How to (ab)use them. *Medical Education, 38*, 1217-1218.
- Kaminski, P. L., Chapman, B. P., Haynes, S. D., & Own, L. (2005). Body image, eating behaviors, and attitudes toward exercise among gay and straight men. *Eating Behaviors, 6*, 179-187.
- Kassel, P., & Franko, D. L. (2000). Body image disturbance and psychodynamic psychotherapy with gay men. *Harvard Review of Psychiatry, 8*, 307-317.
- Kimmel, S. B., & Mahalik, J. R. (2005). Body image concerns of gay men: The roles of minority stress and conformity to masculine norms. *Journal of Consulting and Clinical Psychology, 6*, 1185-1190.
- Lakkis, J., Ricciardelli, L., & Williams, R. (1999). Role of sexual orientation and gender related traits in disordered eating. *Sex Roles, 41*, 1-16.
- Lantz, C. D., Rhea, D. J., & Mayhew, J. L. (2001). The drive for size: A psycho-behavioral model of muscle dysmorphia. *International Sports Journal, 5*, 71-86.
- Leit, R. A., Gray, J. J., & Pope, H. G. (2002). The media's representation of the ideal male body: A cause for muscle dysmorphia. *International Journal of Eating Disorders, 31*, 334-338.
- Levesque, M. J., & Vichesky, D. R. (2006). Raising the bar on the body beautiful: An analysis of the body image concerns of homosexual men. *Body Image, 3*, 45-55.
- Lorenzen, L. A., Grieve, F. G., & Thomas, A. (2004). Exposure to muscular male models decreases men's body satisfaction. *Sex Roles, 51*, 743-748.
- Maida, D. M., & Armstrong, S. L. (2005). The classification of muscle dysmorphia. *International Journal of Men's Health, 4*, 73-91.
- Mann, W. J. (1998). Laws of desire: Has our imagery become overridealized? In D. Atkins (Ed.), *Looking queer: Body image and identity in lesbian, bisexual, gay, and transgender communities* (pp. 345-353). New York: Harrington Park Press.
- Mayville, S. B., Williamson, D. A., White, M. A., Netemeyer, R. G., & Drab, D. L. (2002). Development of the Muscle Appearance Satisfaction Scale: A self-report measure for the assessment of muscle dysmorphia symptoms. *Assessment, 9*, 351-360.
- McCreary, D. R., & Sasse, D. K. (2000). An exploration of the drive for muscularity in adolescent boys and girls. *Journal of American College Health, 48*, 297-304.
- McDonald, J. L. (2004). The optimal number of categories for numerical rating scales. *Dissertation Abstracts International, 65*, 5A. (UMI No. 3134422)
- Mintz, L. B., & Betz, N. B. (1986). Sex differences in the nature, realism, and correlates of body image. *Sex Roles, 15*, 185-195.
- Morrison, M. A., Morrison, T. G., & Sager, C. L. (2004). Does body satisfaction differ between gay men and lesbian women and heterosexual men and women? A meta-analytic review. *Body Image, 1*, 127-138.
- Morrison, T. G., Morrison, M. A., Hopkins, C., & Rowan, E. T. (2004). Muscle mania: Development of a new scale examining the drive for muscularity in Canadian males. *Psychology of Men & Masculinity, 5*, 30-39.

- Muller, S. M., Dennis, D. L., Schneider, S. R., & Joyner, R. L. (2004). Muscle dysmorphia among selected male college athletes: An examination of the Lantz, Rhea, and Mayhew model. *International Sports Journal*, 8, 119-125.
- National Center for Health Statistics. (2002). *Sexual behavior and selected health measures: Men and women 15-44 years of age, United States, 2002*. Retrieved March 20, 2007, from <http://www.cdc.gov/nchs/products/pubs/pubd/ad/361-370/ad362.htm>
- Olivardia, R., Pope, H. G., Borowiecki, J. J., & Cohane, G. H. (2004). Biceps and body image: The relationship between muscularity and self-esteem, depression, and eating disorder symptoms. *Psychology of Men & Masculinity*, 5, 112-120.
- Olivardia, R., Pope, H. G., & Hudson, J. I. (2000). Muscle dysmorphia in male weightlifters: A case-control study. *American Journal of Psychiatry*, 157, 1291-1296.
- Page, R. M., & Hammermeister, J. (1995). Shyness and loneliness: Relationship to the exercise frequency of college students. *Psychological Reports*, 76, 395-398.
- Pope, C. G., Pope, H. G., Jr., Menard, W., Fay, C., Olivardia, R., & Phillips, K. A. (2005). Clinical features of muscle dysmorphia among males with body dysmorphic disorder. *Body Image*, 2, 395-400.
- Pope, H. G., Jr., Gruber, A. J., Choi, P., Olivardia, R., & Phillips, K. A. (1997). Muscle dysmorphia: An unrecognized form of body dysmorphic disorder. *Psychosomatics*, 38, 548-557.
- Pope, H. G., Jr., & Katz, D. L. (1994). Psychiatric and medical effects of anabolic-androgenic steroid use: A controlled study of 160 athletes. *Archives of General Psychiatry*, 51, 375-382.
- Pope, H. G., Jr., Olivardia, R., Gruber, A., & Borowiecki, J. (1999). Evolving ideals of male body image as seen through action toys. *International Journal of Eating Disorders*, 26, 65-72.
- Pope, H. G., Jr., Phillips, K. A., & Olivardia, R. (2000). *The Adonis complex: The secret crisis of male body obsession*. New York: The Free Press.
- Rawson, E. S., & Clarkson, P. M. (2002). Ephedrine as an ergogenic aid. In C. E. Yealis, & M. Bahrke (Eds.), *Performance enhancing substances in sport and exercise* (pp. 289-298). Champaign: Human Kinetics.
- Ricciardelli, L. A., & McCabe, M. P. (2001). Moderators of sociocultural influences on body dissatisfaction, strategies to decrease weight and strategies to increase muscle tone among adolescent boys and girls. *Sex Roles*, 44, 189-207.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. New York: Princeton University Press.
- Russell, C. J., & Keel, P. K. (2002). Homosexuality as a specific risk factor for eating disorders in men. *International Journal of Eating Disorders*, 31, 300-306.
- Russell, D. W. (1996). UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment*, 66, 20-40.
- Siever, M. D. (1994). Sexual orientation and gender as factors in socioculturally acquired vulnerability to body dissatisfaction and eating disorders. *Journal of Consulting and Clinical Psychology*, 62, 252-260.
- Silber, E., & Tippett, J. (1965). Self-esteem: Clinical assessment and measurement validation. *Psychological Reports*, 16, 1017-1071.
- Silberstein, L. R., Mishkind, M. E., Striegel-Moore, R. H., Timko, C., & Rodin, J. (1989). Men and their bodies: A comparison of homosexual and heterosexual men. *Psychosomatic Medicine*, 51, 337-346.
- Strong, S. M., Singh, D., & Randall, P. K. (2000). Childhood gender nonconformity and body dissatisfaction in gay and heterosexual men. *Sex Roles*, 43, 427-439.

- Strong, S. M., Williamson, D. A., Netemeyer, R. G., & Geer, J. H. (2000). Eating disorder symptoms and concerns about body differ as a function of gender and sexual orientation. *Journal of Social and Clinical Psychology, 19*, 240-255.
- Vartanian, L. R., Giant, C. L., & Passino, R. M. (2001). "Ally McBeal vs. Arnold Schwarzenegger": Comparing mass media, interpersonal feedback and gender as predictors of satisfaction with body thinness and muscularity. *Social Behavior and Personality, 29*, 603-614.
- Williamson, I., & Hartley, P. (1998). British research into the increased vulnerability of young gay men to eating disturbance and body dissatisfaction. *European Eating Disorders Review, 6*, 160-170.
- Yelland, C., & Tiggemann, M. (2003). Muscularity and the gay ideal: Body dissatisfaction and disordered eating in homosexual men. *Eating Behaviors, 4*, 107-116.



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