

Support for the uniqueness of body dissatisfaction from drive for muscularity among men

Derek Bergeron, Tracy L. Tylka*

The Ohio State University, Department of Psychology, 225 Psychology Building, 1835 Neil Avenue, Columbus, OH 43210, United States

Received 12 September 2006; received in revised form 28 April 2007; accepted 2 May 2007

Abstract

This study explored whether three dimensions of men's body dissatisfaction (muscularity, body fat, and height) are distinct from drive for muscularity (body image, behaviors, and attitudes) in a sample of 368 college men. If body dissatisfaction is a unique construct, then it will be associated with psychological well-being above and beyond the variance accounted for by drive for muscularity body image, behaviors, and attitudes. Findings revealed such incremental evidence, supporting body dissatisfaction's unique contribution to all five investigated indices of psychological well-being. Overall, body dissatisfaction and drive for muscularity are not completely parallel constructs, highlighting the need to assess men's dissatisfaction with their muscularity, body fat, and height for a more comprehensive picture of their body image.

© 2007 Published by Elsevier Ltd.

Keywords: Male body dissatisfaction; Muscularity dissatisfaction; Body fat dissatisfaction; Height dissatisfaction; Drive for muscularity body image; Drive for muscularity attitudes; Drive for muscularity behaviors

Introduction

Although the body-image literature historically has focused mostly on women and their desire to become thinner, many researchers (e.g., Leit, Pope, & Gray, 2001; McCreary & Sasse, 2000; Tylka, Bergeron, & Schwartz, 2005) recently have argued that men also experience body-image concerns and have spearheaded much investigation in this area. This research has indicated that, unlike women, men's body image appears to be linked to their aspirations for increased muscle mass (Jacobi & Cash, 1994; McCreary & Sasse, 2000; Morrison, Morrison, Hopkins, & Rowan, 2004). Men's perceptions of their muscularity impact their

well-being, suggesting that body image is an important topic of empirical and clinical interest for men (Pope, Phillips, & Olivardia, 2000).

Appropriately, many scholars have focused on men's drive for muscularity when conceptualizing men's body image. Drive for muscularity reflects dissatisfaction with current level of muscularity and preoccupation with performing behaviors geared toward increasing muscularity. Because body image contains behavioral as well as emotional, cognitive, and perceptual components (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999), drive for muscularity can be classified as a facet of men's body image.

Several measures have been constructed to assess drive for muscularity, such as the Drive for Muscularity Scale (DMS; McCreary & Sasse, 2000) and the Drive for Muscularity Attitudes Questionnaire (DMAQ; Morrison et al., 2004). The DMAQ is a brief 8-item instrument that contains one overall drive for muscularity attitudes factor

* Corresponding author. Tel.: +1 740 725 6384; fax: +1 614 292 5817.

E-mail address: tylka.2@osu.edu (T.L. Tylka).

(Morrison et al., 2004), whereas the DMS is more comprehensive as it contains two distinct factors that assess men's desire to become muscular and their behaviors geared toward increasing their muscle mass (McCreary, Sasse, Saucier, & Dorsch, 2004). The Muscle Dysmorphic Disorder Inventory (MDDI; Hildebrandt, Langenbucher, & Schlundt, 2004) assesses a closely related construct, muscle dysmorphia, and is divided into three subscales: drive to increase body size, intolerance of appearance, and impairment in daily activities due to preoccupation with weight training.

In addition to muscularity, other aspects central to men's body image have been uncovered. For instance, Ridgeway and Tylka (2005) noted that college men consistently stated that they wanted to be leaner and taller as well as more muscular. The focus on lowering body fat may be subtle, however. Studies have reported only modest differences between men's self-ideal ratings on fat-based silhouettes (Pope, Gruber, et al., 2000), and only approximately a third of boys are on diets to lose weight (a third are on diets to gain weight, and a third do not report dieting; McCreary & Sasse, 2002). Some men may want to lower their body fat in an attempt to showcase their muscle and to appear similar to the mesomorphic and tall societal ideal body type (Hildebrandt et al., 2004). Nevertheless, preliminary research has suggested that body fat and height dissatisfaction, along with muscularity dissatisfaction, were related to college men's well-being (Tylka et al., 2005). Because the DMS and DMAQ solely focus on muscularity, they do not address body fat and height dissatisfaction. To date, only the Male Body Attitudes Scale (MBAS; Tylka et al., 2005) contains subscales that assess men's dissatisfaction with these three aspects.

Although the MBAS muscularity subscale may be conceptually similar to the DMS muscularity body image subscale and the DMAQ, these measures may not be assessing the same construct. First, the MBAS muscularity subscale inquires about men's dissatisfaction with a greater number of specific body areas shown to be of concern to men (Ridgeway & Tylka, 2005): arms, chest, back, shoulders, upper legs, and calves. The DMS asks about dissatisfaction with arms, chest, and legs; the DMAQ asks about dissatisfaction with back, arms, and legs. Second, this MBAS subscale is different in that its items are tailored to reflect the characteristics of muscularity men desire with each body area (e.g., stronger and larger arms; broader, larger, and more defined chest; a larger and more defined back; broader shoulders; larger calves; Ridgeway & Tylka, 2005).

However, it remains to be determined whether men's body dissatisfaction with their muscularity, body fat, and height are empirically distinct from their drive for muscularity body image, behaviors, and attitudes. Although men's body dissatisfaction would be expected to correlate significantly with drive for muscularity because both constructs emphasize the mesomorphic ideal body type promulgated by the media, they should not be completely parallel constructs for the reason that each is theorized to be an individual component of men's body image (Tylka et al., 2005). Therefore, this study explored whether body dissatisfaction is empirically distinct from drive for muscularity among men. Given that drive for muscularity is related to well-being (e.g., Adams, Turner, & Bucks, 2005; McCreary & Sasse, 2002; Olivardia, Pope, Borowiecki, & Cohane, 2004), men's body dissatisfaction should be associated with psychological well-being above and beyond the variance accounted for by drive for muscularity if it is indeed unique and salient. If such incremental evidence is obtained, then it would benefit psychologists to assess men's body dissatisfaction along with drive for muscularity in order to gain a more comprehensive understanding of their male clients' and research participants' body image.

Method

Participants

Participants were 368 college men (mean age = 19.11 years, $SD = 1.90$, age range 18–30 years) from a large Midwestern university. They identified as Caucasian American (84.5%), Asian American (6.3%), African American (5.2%), Latino (2.4%), or multiracial (1.6%). Men reported being first year students (84.9%), sophomores (8.2%), juniors (2.5%), seniors (1.4%), or graduate students (3.0%). They indicated that they were heterosexual (97.3%), gay (1.9%), or bisexual (.8%). Their average reported weight was 78.88 ($SD = 14.33$) kilograms (i.e., 173.9 [$SD = 31.6$] pounds), their average reported height was 180.09 ($SD = 6.86$) centimetres (i.e., 70.9 [$SD = 2.7$] inches), and the average BMI calculated from these values was 24.3 ($SD = 3.9$) which was within the normal range recommended for men (Kuczmarski & Flegal, 2000).

Constructs and measures

Body dissatisfaction

The MBAS (Tylka et al., 2005) contains three subscales, which have been confirmed via factor

analysis (Tylka et al., 2005): muscularity (10 items), low body fat (eight items), and height (two items). Items are rated on a 6-point scale ranging from 1 (*never*) to 6 (*always*). Subscale items are averaged, with higher scores indicating greater dissatisfaction. MBAS subscale scores were internally consistent, stable over a 2-week period, and yielded evidence of convergent, construct, and discriminant validity in three samples of college men (Tylka et al., 2005). For the current sample, Cronbach's alphas were .90 for muscularity scores, .94 for low body fat scores, and .85 for height scores.

Drive for muscularity

The DMS (McCreary & Sasse, 2000) is divided into a 7-item muscularity-oriented body-image (MBI) subscale and a 7-item muscularity behaviors (MB) subscale. Each item is rated on a 6-point scale ranging from 1 (*always*) to 6 (*never*). Subscale scores were calculated by reversing coding and averaging the respective items, and higher scores reflect greater drive for muscularity. Previous studies have supported its internal consistency reliability, and convergent, factorial, and discriminant validity (McCreary et al., 2004). For the current sample, Cronbach's alphas were .90 for MBI scores and .86 for MB scores.

The DMAQ (Morrison et al., 2004) was used to assess men's drive for muscularity attitudes. It contains eight items that are rated on a 5-point scale which ranges from 1 (*strongly disagree*) to 5 (*strongly agree*). Items are averaged, with a higher total score indicating a stronger drive for muscularity. The internal consistency reliability of its scores was supported, and its construct validity has been upheld by its negative correlation with appearance self-esteem and positive correlations with weight training, protein/supplement usage, and contemplation of steroid use (Morrison et al., 2004). For the current sample, Cronbach's alpha was .84 for its scores.

Psychological well-being

Five questionnaires measured men's psychological well-being. First, the General Health Questionnaire-28 (GHQ-28; Goldberg & Hillier, 1979) was used. The GHQ-28 was developed to measure overall psychological distress in non-clinical populations and was derived from factor analyses of the original 60-item GHQ. Its items are rated on a 4-point scale (ranging from 1 = *much better than usual* to 4 = *much worse than usual*) and averaged. Higher scores indicate greater psychological distress. Goldberg et al. (1997) reported that its scores yielded adequate internal consistency and stability. Its convergent validity has been supported via its strong relationships to several other

measures of psychological distress (Cano et al., 2001). For the current sample, Cronbach's alpha was .93 for its scores.

The Center for Epidemiological Studies-Depression Scale (CES-D; Radloff, 1977) also was given to participants. The CES-D contains 20 items designed to assess depressive symptomatology. Its items ask participants to rate on a 4-point scale (ranging from 1 = *never or rarely* to 4 = *most*) how often particular symptoms have applied to them over the past week. Items are averaged, with higher scores reflecting greater depressive symptomatology. Radloff (1977) reported adequate internal consistency reliability and test-retest reliability over a 4-week period. Its convergent validity has been supported via its strong relationships to other measures of depression (Radloff, 1977). For the current sample, Cronbach's alpha was .91 for its scores.

Third, the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) assessed participants' self-esteem, a central dimension of psychological well-being. The RSE contains 10 items that are rated on a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Items are averaged, and higher scores reflect greater self-esteem. Its scores yielded evidence of internal consistency reliability, test-retest reliability over a 2-week period, and construct validity via its relationships to other measures of self-esteem (McCreary & Sasse, 2000; Robinson & Shaver, 1973). For the current sample, Cronbach's alpha was .88 for its scores.

Fourth, the proactive coping subscale of the Proactive Coping Inventory (PCI; Greenglass, Schwarzer, & Taubert, 1999) was used to assess men's proactive coping (i.e., efforts to develop resources that facilitate promotion toward challenging goals and personal growth). This subscale contains 14 items, and participants indicate how true each statement is for them on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Its items are averaged, and higher scores indicate greater proactive coping. Greenglass et al. (1999) reported that its scores were internally consistent and that it demonstrated construct validity as it was related to proactive attitudes and generalized self-efficacy. For the current sample, Cronbach's alpha was .88 for its scores.

The final measure of psychological well-being was the Psychological Hardiness Scale – Short Form (PHS-SF; Betz & Campbell, 2003). The PHS-SF is a 20-item abbreviated version of the original 40-item PHS, a measure of resilience (Younkin & Betz, 1995). Its items are rated on a 5-point scale which ranges from 1 (*strongly disagree*) to 5 (*strongly agree*). Items are averaged, with higher scores reflecting greater

hardiness. The PHS-SF has been found to correlate highly with the 40-item version, the internal consistency reliability of its scores was upheld, and its construct validity was supported via its relationships to optimism and generalized self-efficacy (Betz & Campbell, 2003). For the current sample, Cronbach's alpha was .92 for its scores.

Procedure

Participants were recruited from a description of the study listed on the psychology department's website. They were instructed that the study was an exploration of body attitudes, beliefs about appearance, and well-being. After participants signed the informed consent form and were guaranteed anonymity, they completed the measures on a computer in a research laboratory. Measures were counterbalanced to control for order effects. They also indicated their race/ethnicity, age, sexual orientation, year in school, and weight and height (used to calculate BMI). Participants received course credit for their involvement.

Results

Preliminary analyses

We screened missing data (constituting .41% of all possible item responses) and found it to be evenly distributed across items, measures, and participants.

Therefore, we proceeded to calculate values for the missing data via maximum likelihood analysis of the observed item values, a procedure recommended by Collins, Shafer, and Kam (2001). We then examined the data to ensure that the variables' distributions met the statistical assumptions of the planned analyses (i.e., normality, linearity, homoscedasticity); no substantial violations were uncovered. Means, standard deviations, and intercorrelations of the measures are included in Table 1.

Incremental contribution of MBAS body dissatisfaction scores

We used hierarchical multiple regression to determine whether body dissatisfaction with muscularity, body fat, and height (assessed by the MBAS subscales) predicted unique variance in each of the psychological well-being measures above and beyond the variance accounted for by the drive for muscularity measures. Therefore, in the prediction of each well-being measure, the drive for muscularity measures (DMS-MBI, DMS-MB, and the DMAQ) were entered at Step 1, and the MBAS subscales were entered at Step 2. A statistically significant increment in R^2 at Step 2 would indicate incremental validity evidence for body dissatisfaction assessed by the MBAS. Because a total of five hierarchical regression analyses were performed, we set the p level at .01 (.05/5) to control for experiment-wise error. Table 2 presents the findings for these analyses.

Table 1
Means, standard deviations, and correlations among the measures

Measure	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. BMI	24.29	3.90	–										
2. MBAS muscularity	3.26	.99	–.16*	–									
3. MBAS low body fat	2.73	1.24	.56***	.26***	–								
4. MBAS height	2.92	1.49	.01	.13*	.12*	–							
5. DMS-MBI	3.51	1.17	–.25***	.84***	.10	.08	–						
6. DMS-MB	2.17	1.06	–.04	.27***	.02	.26***	.35***	–					
7. DMAQ	3.50	.70	–.15**	.68***	.10	.07	.75***	.41***	–				
8. GHQ-28	1.69	.40	–.11*	.20***	.13*	.17***	.17***	.09	.11*	–			
9. CES-D	1.70	.92	–.06	.23***	.19***	.13*	.20***	.08	.12*	.78***	–		
10. RSE	3.23	.49	–.01	–.28***	–.26***	–.13*	–.19***	.00	–.13*	–.61***	–.64***	–	
11. PCI-PC	3.14	.41	.06	–.26***	–.17***	–.20***	–.20***	–.05	–.17***	–.58***	–.64***	.72***	–
12. PHS-SF	3.67	.58	.05	–.21***	–.13*	–.05	–.11*	–.13*	–.04	–.35***	–.38***	.64***	.64***

Note. BMI: Body Mass Index, MBAS: Male Body Attitudes Scale, DMS-MBI: Muscularity body image subscale of the Drive for Muscularity Scale, DMS-MB: Muscularity behaviors subscale of the Drive for Muscularity Scale, DMAQ: Drive for Muscularity Attitudes Questionnaire, GHQ-28: General Health Questionnaire-28, CES-D: Center for Epidemiological Studies-Depression Scale, RSE: Rosenberg Self-Esteem Scale, PCI-PC: Proactive coping subscale of the Proactive Coping Inventory, PHS-SF: Short form of the Psychological Hardiness Scale.

* $p < .05$.
 ** $p < .01$.
 *** $p < .001$.

Table 2
Incremental variance in psychological well-being accounted for by MBAS subscale scores

	Cum. R^2	Adj. R^2	ΔR^2	ΔF	β	t (367)
Criterion: General psychological distress (overall F [6,361] = 4.98*)						
Step 1	.039	.029	.039	3.94		
DMS-Muscularity Body Image					.180	2.27
DMS-Muscularity Behaviors					.043	.77
DMAQ					-.055	-.69
Step 2	.088	.071	.049	6.48*		
DMS-Muscularity Body Image					.076	.70
DMS-Muscularity Behaviors					.024	.41
DMAQ					-.062	-.78
MBAS-Muscularity					.089	.88
MBAS-Low Body Fat					.190	2.85*
MBAS-Height					.093	1.67
Criterion: Depressive symptomatology (overall F [6,361] = 5.07*)						
Step 1	.039	.029	.039	4.69*		
DMS-Muscularity Body Image					.228	2.87*
DMS-Muscularity Behaviors					.029	.51
DMAQ					-.061	-.76
Step 2	.091	.072	.051	6.66*		
DMS-Muscularity Body Image					.090	.84
DMS-Muscularity Behaviors					.021	.36
DMAQ					-.075	-.94
MBAS-Muscularity					.128	1.27
MBAS-Low Body Fat					.203	3.05*
MBAS-Height					.057	1.03
Criterion: Self-esteem (overall F [6,361] = 7.83*)						
Step 1	.044	.033	.044	5.53*		
DMS-Muscularity Body Image					-.236	-2.98*
DMS-Muscularity Behaviors					-.074	-1.32
DMAQ					.014	.18
Step 2	.132	.115	.088	12.20*		
DMS-Muscularity Body Image					.006	.06
DMS-Muscularity Behaviors					.083	1.48
DMAQ					.043	.55
MBAS-Muscularity					-.260	-2.65*
MBAS-Low Body Fat					-.221	-3.40*
MBAS-Height					-.083	-1.53
Criterion: Proactive coping (overall F [6,361] = 5.58*)						
Step 1	.044	.034	.044	5.63*		
DMS-Muscularity Body Image					-.201	-2.53*
DMS-Muscularity Behaviors					.186	3.30*
DMAQ					.031	.39
Step 2	.098	.080	.053	7.10*		
DMS-Muscularity Body Image					.097	.90
DMS-Muscularity Behaviors					.180	3.14*
DMAQ					.074	.94
MBAS-Muscularity					-.371	-3.71*
MBAS-Low Body Fat					-.058	-.88
MBAS-Height					-.044	-.80
Criterion: Psychological hardiness (overall F [6,361] = 6.72*)						
Step 1	.042	.032	.037	4.64*		
DMS-Muscularity Body Image					-.149	-1.88
DMS-Muscularity Behaviors					.036	.64
DMAQ					-.068	-.84

Table 2 (Continued)

	Cum. R^2	Adj. R^2	ΔR^2	ΔF	β	t (367)
Step 2	.116	.098	.073	9.94*		
DMS-Muscularity Body Image					.042	.39
DMS-Muscularity Behaviors					.065	1.14
DMAQ					-.049	-.62
MBAS-Muscularity					-.209	-2.11
MBAS-Low Body Fat					-.173	-2.63*
MBAS-Height					-.146	-2.66*

Note. $N = 368$. Cum.: Cumulative, Adj.: Adjusted. Drive for Muscularity measures were entered at Step 1 and the MBAS subscales were entered at Step 2. Degrees of freedom corresponding to ΔF are 3, 364 for Step 1 and 6, 361 for Step 2. All five analyses were also run while controlling for men's BMI (BMI was entered at Step 1, the drive for muscularity measures were entered at Step 2, and the MBAS subscales were entered at Step 3). Statistical patterns of the results were similar across both types of analyses. The only change in significance was that the MBAS height subscale predicted unique variance in general psychological distress when BMI was controlled.

* $p < .01$.

After considering the contribution to the well-being indices made by drive for muscularity measures, body fat dissatisfaction predicted unique variance in general psychological distress (ΔR^2 of Step 2 = .049); body fat dissatisfaction predicted incremental variance in depressive symptomatology (ΔR^2 of Step 2 = .051); muscularity and body fat dissatisfaction predicted unique variance in self-esteem (ΔR^2 of Step 2 = .088); muscularity dissatisfaction predicted incremental variance in proactive coping (ΔR^2 of Step 2 = .053); and body fat and height dissatisfaction predicted incremental variance in psychological hardiness (ΔR^2 of Step 2 = .073). Components of men's body dissatisfaction, then, predicted between 4.9% and 8.8% incremental variance in men's psychological well-being.

Discussion

The findings of this study provide clear support for the uniqueness of men's body dissatisfaction from drive for muscularity body image, behaviors, and attitudes. Bivariate correlations indicated that muscularity body dissatisfaction was associated with drive for muscularity body image (70.6% overlap), drive for muscularity behaviors (7.3% overlap), and drive for muscularity attitudes (46.2% overlap), suggesting that muscularity body dissatisfaction and drive for muscularity have common characteristics but are not identical constructs. Body fat dissatisfaction and height dissatisfaction demonstrated minimal overlap with drive for muscularity body image (1.0 and .6%, respectively), behaviors (.0 and 6.8%, respectively), and attitudes (1.0 and .5%, respectively). Also, the relationships among the drive for muscularity measures were more substantial than most relationships between a body dissatisfaction subscale and a drive for muscularity measure (with the exception of the correlation between muscularity

body dissatisfaction and drive for muscularity body image), upholding the constructs' distinctiveness. Additional statistical evaluations further highlighted the individuality and importance of men's body dissatisfaction, as body dissatisfaction predicted unique variance in psychological well-being above the variance accounted for by drive for muscularity. In total, body dissatisfaction with muscularity, body fat, and height uniquely accounted for between 4.9% and 8.8% of the variance in the well-being indices above that of drive for muscularity body image, attitudes, and behaviors.

More specifically, after considering the contributions made by drive for muscularity, men's dissatisfaction with muscularity was associated with lower self-esteem and lower proactive coping. Research on men's body image has been slanted towards muscularity, as men's muscularity dissatisfaction was considered to be more pronounced than their body fat dissatisfaction (McCreary & Sasse, 2002; Pope, Gruber, et al., 2000; Ridgeway & Tylka, 2005). The present study suggests that not only is body fat dissatisfaction also worthy of investigation, it may hold greater relevance to men's psychological well-being. The fact that body fat dissatisfaction was uniquely associated with a greater number of indices of psychological well-being (i.e., higher psychological distress and depressive symptomatology and lower self-esteem and psychological hardiness) in men after controlling for drive for muscularity supports this assertion. Also, height dissatisfaction was uniquely associated with lower psychological hardiness after controlling for drive for muscularity. Although height is less malleable than body fat and muscularity, this finding suggests that it is also important to study. Like muscularity, low body fat and height may be related to perceptions of societal power and internalization of the media's tall mesomorphic ideal body shape. Men who perceive that they do not measure up to this standard may

benefit from media literacy and engaging in social activism to challenge this unrealistic image.

These unique contributions uphold the construct validity of the MBAS subscales. The MBAS muscularity subscale was more closely associated with drive for muscularity body image than drive for muscularity behaviors (Fisher's $z = 12.76$, $p < .001$), lending support for this subscale's discriminant validity. The fact that the MBAS low body fat subscale was strongly related to participants' self-reported weight ($r = .52$, $p < .001$), and MBAS height scores were strongly related to participants' self-reported height ($r = -.54$, $p < .001$), support their construct validity as these findings accurately reflect the societal pressures men face to be lean and tall (Ridgeway & Tylka, 2005; Vartanian, Giant, & Passino, 2001).

Consistent with previous research (e.g., McCreary & Sasse, 2002; Olivardia et al., 2004), drive for muscularity body image was associated with psychological well-being, as it predicted three of the five indices. However, drive for muscularity largely did not predict men's psychological well-being beyond its association with body dissatisfaction. The one exception is that drive for muscularity behaviors remained associated with greater proactive coping after the dimensions of body dissatisfaction were entered. Perhaps men's perceptions of their physical strength generalize to their beliefs about their psychological strength. Specifically, they may perceive that strength gained via muscle building efforts will be "strength" that can be used for dealing with stressful events, challenging tasks, and personal growth; men who do not engage in these behaviors may not perceive that they have as much "strength" to cope in this manner.

Overall, our findings have implications for the way male body image is assessed. It appears that drive for muscularity measures do not comprehensively assess all aspects of male body image and measures of men's body dissatisfaction, such as the MBAS, are warranted to obtain a broader examination of this construct. Because men's dissatisfaction with their muscularity, body fat, and height are central and unique components of their psychological well-being, their examination is necessary within research settings that attend to men's issues. Likewise, clinicians may want to assess and address their male clients' body dissatisfaction rather than solely attending to their drive for muscularity in order to make improvements in their clients' well-being. Of all dimensions of body image, it appears that body fat dissatisfaction may be of most importance to men's psychological well-being even after considering their drive for muscularity, and thus needs to be

incorporated in research and discussed in clinical settings.

In addition to noting the contributions made by the present study, its limitations need to be addressed. First, findings and inferences regarding drive for muscularity and body dissatisfaction are limited to the measures used to assess these constructs. Second, conclusions that drive for muscularity and body dissatisfaction are responsible for lower psychological well-being are inappropriate, as data were collected from each participant one point in time and causal inferences cannot be established from our data. More confidence in the findings would result by examining whether body dissatisfaction predicted incremental variance in future levels of well-being. Third, because our sample consisted of primarily heterosexual Caucasian first-year college men, it is important to determine whether the findings transfer to diverse racial/ethnic and age groups and specific groups more likely to experience body-image concerns, such as gay men and male bodybuilders, weightlifters, and athletes who excessively emphasize muscularity and strength.

Despite these limitations, this study supports the practical significance of body dissatisfaction in men, as it is uniquely associated with the quality of their lives. The MBAS may be a useful tool to add to the assessment of men's body image, as it can appropriately detect distress experienced with such concerns. Clearly, exploring men's negative body image needs to be continued, as it is related to behaviors that further harm physical and psychological health (e.g., steroids, other maladaptive muscle enhancement supplements, disordered eating, and preoccupation with lifting weights to gain muscle mass; McCreary & Sasse, 2000; Tylka et al., 2005).

References

- Adams, G., Turner, H., & Bucks, R. (2005). The experience of body dissatisfaction in men. *Body Image*, 2, 271–283.
- Betz, N. E., & Campbell, C. (2003). *Self-efficacy and personality correlates of instrumentality*. Unpublished manuscript.
- Cano, A., Sprafkin, R., Saturo, D., Lantinga, L., Fiese, B., & Brand, F. (2001). Mental health screening in primary care: A comparison of three brief measures of psychological distress. *Journal of Clinical Psychiatry*, 3, 206–210.
- Collins, L., Shafer, J., & Kam, C. (2001). A comparison of inclusive and restrictive strategies in modern missing data procedures. *Psychological Methods*, 6, 330–351.
- Goldberg, D., Gater, R., Sartorius, N., Ustun, T., Piccinelli, M., Gueje, O., et al. (1997). The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychological Medicine*, 27, 191–197.
- Goldberg, D., & Hillier, V. (1979). A scaled version of the General Health Questionnaire. *Psychological Medicine*, 9, 139–145.

- Greenglass, E. R., Schwarzer, R., & Taubert, S. (1999). *The Proactive Coping Inventory (PCI)*. Retrieved June 10, 2005, from <http://www.psych.yorku.ca/greenglass>.
- Hildebrandt, T., Langenbucher, J., & Schlundt, D. G. (2004). Muscularity concerns among men: Development of attitudinal and perceptual measures. *Body Image, 1*, 169–181.
- Jacobi, L., & Cash, T. (1994). In pursuit of the perfect appearance: Discrepancies among self-ideal percepts of multiple physical attributes. *Journal of Applied Social Psychology, 24*, 379–396.
- Kuczmarski, R. J., & Flegal, K. M. (2000). Criteria for definition of overweight in transition: Background and recommendations for the United States. *American Journal of Clinical Nutrition, 72*, 1075–1081.
- Leit, R. A., Pope, H. G., & Gray, J. J. (2001). Cultural expectations of muscularity in men: The evolution of *Playgirl* centerfolds. *International Journal of Eating Disorders, 29*, 90–93.
- 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.
- McCreary, D. R., & Sasse, D. K. (2002). Gender differences in high school students' dieting behavior and their correlates. *International Journal of Men's Health, 1*, 195–213.
- McCreary, D. R., Sasse, D. K., Saucier, D. M., & Dorsch, K. D. (2004). Measuring the drive for muscularity: Factorial validity of the Drive for Muscularity Scale in men and women. *Psychology of Men & Masculinity, 5*, 49–58.
- 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 and Masculinity, 5*, 30–39.
- 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 and Masculinity, 5*, 112–120.
- Pope, H. G., Gruber, A. J., Mangweth, B., Bureau, B., deCol, C., Jouvent, R., et al. (2000a). Body image perception among men in three countries. *The American Journal of Psychiatry, 157*, 1297–1301.
- Pope, H. G., Phillips, K. A., & Olivardia, R. (2000b). *The Adonis complex: How to identify, treat, and prevent body obsession in men and boys*. New York: Touchstone.
- Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurements, 1*, 385–401.
- Ridgeway, R. T., & Tylka, T. L. (2005). College men's perceptions of ideal body shape and composition. *Psychology of Men and Masculinity, 6*, 209–220.
- Robinson, J. P., & Shaver, P. R. (1973). *Measures of social psychological attitudes* (2nd ed.). Ann Arbor, MI: Institute for Social Research.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Thompson, J. K., Heinberg, L. J., Altabe, M., & Tantleff-Dunn, S. (1999). *Exacting beauty: Theory, assessment, and treatment of body image disturbance*. Washington, DC: American Psychological Association.
- Tylka, T. L., Bergeron, D., & Schwartz, J. P. (2005). Development and psychometric evaluation of the Male Body Attitudes Scale (MBAS). *Body Image, 2*, 161–175.
- 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 & Personality, 29*, 711–723.
- Younkin, S., & Betz, N. E. (1995). Psychological hardiness: A reconceptualization and measurement. In T. M. Miller (Ed.), *Theory and assessment of stressful life events* (pp. 157–174). Madison, CT: International Universities Press.