



# Men, muscles, and mood: The relationship between self-concept, dysphoria, and body image disturbances<sup>☆</sup>

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## ABSTRACT

Beginning in the early 1990s investigations into the body image concerns of men have increased, and this study adds to extant research by examining correlates of more general body dissatisfaction (BD) and symptoms of muscle dysmorphia (MD) in particular. Three hundred four undergraduate men completed a broad-based symptom inventory, a self-concept questionnaire, and an instrument that assessed problematic body image, eating, and exercise patterns as well as specific symptoms of MD. Multiple regression analyses suggest that lower ratings of overall self-concept and higher levels of depression, anxiety, and interpersonal sensitivity are predictive of body image concerns in men. Furthermore, these variables accounted for almost twice the variance in general BD than they did for specific symptoms of MD. In addition, anorexic and bulimic behaviors, obsessive–compulsive symptoms, and risk factors for interpersonal problems were also associated with symptoms of MD, even when BD was controlled.

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## 1. Introduction

It has been suggested that society's idealization of a hyper-mesomorphic, hyper-lean male body adversely affects the body image and eating behaviors of adolescent and adult males (e.g., [Botta, 2003](#)). For example, exposure to media images of idealized physiques was a key predictor of body image and eating disturbances (BIED) in adolescent boys (Botta). Furthermore, adolescent males who engaged in social comparisons of their bodies with media images were significantly more likely to engage in increased "muscularity behaviors" (e.g., thinking about or taking pills to gain muscle, taking supplements to increase muscle mass), some of which pose health risks. Older adolescents and young men are also at risk for BIED, with one study reporting a 20% prevalence of disturbed eating and eating disorders in a university sample ([O'Dea & Abraham, 2002](#)).

BIED among boys and men are not uncommon among bodybuilders and a specific form of body dysmorphic disorder known as muscle dysmorphia (MD; [Pope, Gruber, Choi, Olivardia, & Phillips, 1997](#)) is of particular concern. According to [Pope et al. \(1997\)](#), men with MD are preoccupied with the concern that they are insufficiently muscular and lean, resulting in behaviors manifested to increase

muscularity, including excessive weight lifting, maintaining a high-volume, muscle-enhancing diet, and using performance enhancing supplements (e.g., steroids). Numerous empirical studies confirmed this pattern of symptomatology throughout the United States, Western Europe, and South Africa (e.g., [Olivardia, Pope, & Hudson, 2000](#)).

While the investigation of BIED symptoms in men is in the relatively early stages, several research teams have identified a connection between BIED problems and affective symptomatology (e.g., [Santos, Richards, & Bleckley, 2007](#)). This study aims to add to the body of knowledge regarding affective symptomatology and self-concept as correlates of general BD as well as symptoms of MD more specifically. Multiple regression analyses were used to test the hypotheses that low overall self-concept and high levels of interpersonal sensitivity, depression, and anxiety are predictive of BD and symptoms of MD in young men. In addition, the associations

**Table 1**

Means, standard deviations, and intercorrelations for body dissatisfaction and total self-concept/depression/anxiety/interpersonal sensitivity predictor variables

Variable	M	SD	1	2	3	4
Body dissatisfaction	3.22	.97	-.44	.43	.39	.50
Predictor variable						
1. Total self-concept	43.99	8.60	–			
2. Depression	63.91	10.36	-.52	–		
3. Anxiety	59.47	12.06	-.47	.75	–	
4. Interpersonal sensitivity	63.86	11.43	-.54	.76	.69	–

Note. All correlations are significant at  $p < .01$ .  
N = 294.

<sup>☆</sup> Although the title was created independently, it is similar to the dissertation entitled "Men, muscles, and mood: Comparative analysis of body image dissatisfaction among male competitive bodybuilders, non-competitive weight trainers, and active controls," by T. C. Pickett, 2002, *Dissertation Abstracts International*, 63 (02-B), 1043. (UMI No. 3042702).

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**Table 2**

Multiple regression analysis summary for total self-concept/depression/anxiety/interpersonal sensitivity variables predicting body dissatisfaction

Variable	B	SEB	$\beta$	t	sr <sup>2</sup>
Total self-concept	-.03	.01	-.24	-3.90*	.04
Depression	.01	.01	.05	.58	.00
Anxiety	.00	.01	.02	.24	.00
Interpersonal sensitivity	.03	.01	.32	3.87*	.04

Note. R<sup>2</sup> = .290, (N = 294, p < .01).

95% CI for R<sup>2</sup> = .196 to .371 (p < .01).

\*p < .05.

sr<sup>2</sup> = squared semipartial correlation.

**Table 3**

Means, standard deviations, and intercorrelations for muscle dysmorphia and total self-concept/depression/anxiety/interpersonal sensitivity predictor variables

Variable	M	SD	1	2	3	4
Muscle dysmorphia	2.98	.69	-.24	.35	.25	.36
Predictor variable						
1. Total self-concept	43.99	8.60	-			
2. Depression	63.91	10.36	-.52	-		
3. Anxiety	59.47	12.06	-.47	.75	-	
4. Interpersonal sensitivity	63.86	11.43	-.54	.76	.69	-

Note. All correlations are significant at p < .01.

N = 294.

between psychological symptoms and MD when BD is controlled will be explored.

**2. Method**

**2.1. Participants**

Participants were 304 undergraduate men at a large public university in the south central US (median age = 20). The sample was primarily European American (N = 196, 66.7%), Latin American (N = 36, 12.2%), and African American (N = 31, 10.5%). In addition, 89.8% of participants self-identified as heterosexual and 7.5% identified themselves as gay or bisexual.

**2.2. Measures**

**2.2.1. Male Eating Behavior and Body Image Evaluation (MEBBIE)**

In addition to a brief demographic questionnaire, participants also completed the MEBBIE (Kaminski & Caster, 1994; Kaminski et al., 2002) a 57-item self-report instrument assessing men's attitudes and behaviors regarding eating, exercise, and body image. The MEBBIE yields scores on eight theoretically and empirically derived subscales (Kaminski & Caster, 1994; Kaminski, McFarland, & Chapman, 2005). The Muscle Dysmorphia Scale (MDS; Kaminski, McFarland, & Chapman, 2008) and Body Dissatisfaction Scale (BDS) subscale were used in the current study.

The MDS was derived with the assistance of expert raters and consists of the 16 MEBBIE items that were rated as the most likely to

**Table 4**

Multiple regression analysis summary for total self-concept/depression/anxiety/interpersonal sensitivity variables predicting muscle dysmorphia

Variable	B	SEB	$\beta$	t	sr <sup>2</sup>
Total self-concept	.00	.01	-.04	-.58	.00
Depression	.02	.01	.23	2.43*	.02
Anxiety	-.01	.01	-.11	-1.26	.00
Interpersonal sensitivity	.01	.01	.24	2.62*	.02

Note. R<sup>2</sup> = .150, (N = 294, p < .01).

95% CI for R<sup>2</sup> = .073 to .222 (p < .01).

\*p < .05.

sr<sup>2</sup> = squared semipartial correlation.

**Table 5**

Partial correlations for muscle dysmorphia and other symptomatology when body dissatisfaction is controlled

Variable	r
MEBBIE critical item	MDS
I diet (e.g., count calories, limit fat grams, etc.)	.33**
I fast to control my weight	.04
I have taken appetite suppressants (diet pills)	.20**
I overeat and feel little control over this	.01
I eat until I feel "spaced out" or numb	.09
I make myself vomit as a way of trying to control my weight	.13*
SCL-90-R scales	
Somatization	.05
Obsessive-compulsive	.13*
Anxiety	.02
Interpersonal sensitivity	.12*
Depression	.14*
Phobic anxiety	-.08
Hostility	.12*
Paranoid ideation	.17**

\* p < .05. \*\* p < .01.

N = 276.

discriminate men suffering from MD from other men. Internal consistency (Cronbach's alpha) for the MDS subscale in the current sample was good (α = .80), as was the internal consistency for the BDS (α = .89). (See Kaminski et al., 2002; Kaminski et al., 2008 for additional psychometric data.)

Participants also completed two other widely accepted scales: the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1994) and the Tennessee Self-Concept Scale: Second Edition (TSCS:2; Fitts & Warren, 1996). In the present sample, internal consistency coefficients for the SCL-90-R and TSCS:2 subscales ranged from α = .85 to α = .92.

**3. Results**

Results supported the hypothesis that higher symptoms of depression, anxiety, and interpersonal sensitivity, and lower overall self-concept predicted BD (see Tables 1 and 2). Only total self-concept and interpersonal sensitivity, however, were significant unique predictors of symptoms of BD. An additional regression analysis showed that the same four independent variables predicted higher MD symptoms (see Tables 3 and 4). However, only depression and interpersonal sensitivity were unique predictors of MD symptoms. Exploratory analyses revealed that, after BD was controlled, symptoms of MD were significantly associated with key variables (see Table 5).

**4. Discussion**

The combination of a lower total self-concept and higher levels of depression, anxiety, and interpersonal sensitivity predicted elevations in general BD as well as the more specific type of body dissatisfaction that is experienced along with other symptoms of muscle dysmorphia. Only interpersonal sensitivity, however, was a statistically significant unique predictor in both regression models. Interpersonal sensitivity as assessed by the SCL-90-R not only taps comparative self-worth, but includes items related to self-consciousness and sensitivity to criticism. It is reasonable to hypothesize that men with traits/symptoms like these would be more vulnerable to media influences and peer pressure and, therefore, at higher risk for BD and MD.

The link between depression and BIED has been extensively researched, and this study supports and extends prior findings especially with respect to MD. Specifically, although depressive symptoms are significantly correlated with both BD and symptoms of MD, they only predicted significant unique variance in the latter. It is likely that a man with MD experiences a wide range of negative thought and behavior patterns that increase his susceptibility to depression. In addition, a bi-directional relationship or recursive process between MD and symptoms

of depression may exist whereby symptoms of depression are a risk factor for the onset of MD and the ideation and behaviors associated with MD may contribute to comorbid symptoms of depression.

Even with the effects of BD controlled, symptoms of MD were associated with other symptoms of psychoemotional distress as well as specific disordered eating behaviors. Regarding the former, men with high symptoms of MD were also significantly more likely than other men to endorse obsessive–compulsive symptoms, hostility, and paranoid ideation. With respect to disordered eating, dieting, the use of diet pills, and vomiting as a method of weight management were significantly associated with symptoms of MD. These results support the notion of MD as a specific form of BD, with risk factors and/or associated features that are worthy of additional empirical investigation.

Several limitations of this study deserve mention. First, because participants were volunteers from one university, the results of the study may not be generalizable to other populations. Another limitation of the study is that socially desirable responding in a number of sensitive areas (e.g., sexual orientation, bingeing behavior) may have led to underreporting in some areas that would affect our results and conclusions.

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