

# Body Image Concerns and Contingent Self-Esteem in Male and Female College Students

Joel R. Grossbard · Christine M. Lee ·  
Clayton Neighbors · Mary E. Larimer

Published online: 13 September 2008  
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**Abstract** Body dissatisfaction in females, and to a lesser extent males, is associated with low self-esteem, depression, and eating disorders. This research examined gender as a moderator of the association between contingent self-esteem and body image concerns, including weight and muscularity. Participants included 359 (59.1% female) heavy drinking first-year U.S. undergraduate students who completed a survey assessing health-related risk behaviors. Hierarchical multiple regression was used to examine relations among gender, contingent self-esteem, and body image. Females reported higher levels of contingent self-esteem and greater concerns about their weight, although males reported a greater drive for muscularity. The relationship between contingent self-esteem and weight concerns was stronger among females, and for males, greater contingent self-esteem was associated with a greater drive for muscularity.

**Keywords** Body image · Muscularity ·  
Contingent self-esteem · Weight concerns

## Introduction

Research has documented a range of negative health-related consequences associated with body dissatisfaction among

male and female college students, including low self-esteem, negative affect, risky body-change strategies, and the development of eating disorders (Mintz and Betz 1988; Olivardia et al. 2004; Stice 2002). Historically, research has primarily focused on body dissatisfaction among females, and college women have been shown to engage in risky weight-loss behaviors including dieting, using laxatives, self-induced vomiting, and excessive exercise (e.g., Mintz and Bentz 1988; Stice 2002). Recent studies reveal body image disturbances in males are manifested in concerns about both weight and muscularity, suggesting body dissatisfaction among males may be more complex than among females (Bergstrom and Neighbors 2006). The purpose of the current study is to document gender differences associated with concerns about weight/shape and muscularity among a sample of male and female college students, and evaluate the influence of contingent self-esteem in association with such body image concerns. Contingent self-esteem reflects the extent to which one's positive self-image is conditional or contingent upon social approval, meeting externally imposed expectations, or other perceived criteria, including appearance (Crocker and Wolfe 2001; Kernis 2003). Greater understanding of the social and cognitive mechanisms contributing to body image concerns among college students would inform the development of etiological models accounting for gender differences, and subsequently aid in intervention development.

## Body Image and College Students

Body image is a significant developmental concern for adolescents and young adults, in light of the physical, psychological, and social transitions occurring during these periods (Jones and Crawford 2005), and associations

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This research was supported in part by a grant from the National Institute on Alcohol Abuse and Alcoholism (U01AA014742) awarded to Mary E. Larimer.

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J. R. Grossbard (✉) · C. M. Lee · C. Neighbors · M. E. Larimer  
Department of Psychiatry and Behavioral Sciences,  
University of Washington,  
1100 NE 45th St., Suite 300, Box 354944,  
Seattle, WA 98195-1525, USA  
e-mail: joelg13@u.washington.edu

between body satisfaction and positive psychological and social functioning are empirically supported (see Cash and Pruzinsky 2002 for a review). College students are particularly susceptible to social pressure associated with physical appearance, as these developmental periods are critical for the formation of one's identity and self-worth across a number of domains, including physical self-evaluation (Crocker and Wolfe 2001; Crocker et al. 2003). The onset of eating disorder symptoms is typically between 15 and 20 years of age (e.g., Striegel-Moore and Bulik 2007), and results of one study found 82% of college women indicated using one or more dieting behaviors at least daily, and 33% reported the monthly use of more extreme strategies (e.g., using laxatives, vomiting) to control their weight (Mintz and Betz 1988). Moreover, a recent survey of college students indicates 7.6% of females and 2.8% of males reported vomiting, taking laxatives, or diet pills to lose weight in the previous month (American College Health Association 2006).

Affective and behavioral correlates of male body dissatisfaction consistent with a desire to lose weight resemble those reported by females, including negative affect and disordered eating (Cafri and Thompson 2004; Cash and Pruzinsky 2002). However, traditional assessments of body dissatisfaction have primarily evaluated concerns about being overweight, neglecting to consider dissatisfaction with muscle tone, resulting in the underestimation of body image dissatisfaction in male populations (Cafri and Thompson 2004; McCreary and Sadava 2001). Drewnowski and Yee (1987) evaluated body satisfaction among first-year college students, and although the majority of females (85%) reported a desire to lose weight, approximately half of the males in the sample wanted to lose weight (40%), while the other half (45%) wanted to gain weight. Males seeking to enhance their muscularity are more likely than females to engage in steroid and dietary supplement use, and high protein dieting in order to gain weight and muscle (Cafri et al. 2005; McCabe and Ricciardelli 2001; McCreary and Sasse 2000; Wojtowicz and von Ranson 2006). Such weight and muscle-enhancement strategies are associated with deleterious physical and psychological outcomes, including elevated cholesterol, coronary heart disease, increased aggression, and depressive symptoms (see Cafri et al. 2005 for a review).

#### Etiological Factors of Body Image Concerns

Sociocultural perspectives on body image propose that gender differences in body dissatisfaction likely represent different cultural standards for ideal body types: for females, a thin figure represents attractiveness and for males, a more muscular, mesomorphic build symbolizes power and success. Evidence suggests that Western society associates idealized physical qualities with greater occupa-

tional competence in adults, as well as academic and social competence in children (Jackson 2002). Furthermore, adolescents who perceive pressure to lose or gain weight from the media, parents, and peers are more likely to engage in dangerous body-change strategies, and are at greater risk for developing eating disorders than those who do not perceive such pressure (McCabe and Ricciardelli 2003; Smolak et al. 2005).

Cognitive and personality variables such as perfectionism, fear of negative evaluation, and low self-esteem are also associated with body dissatisfaction in both females and males (Davis et al. 2005; Stice 2002). Researchers have proposed that adolescents with higher levels of global self-esteem are less vulnerable to various forms of psychopathology (e.g., body dissatisfaction), although such individuals may also develop egoistic self-perceptions and experience anxiety in the face of failure (Deci and Ryan 1995). Deci and Ryan (1995) suggest that greater self-esteem does not always translate into more positive mental health, questioning the assumption that "more is better". An examination of whether self-esteem is stable or unstable, also called "true" or "contingent" self-esteem, may provide a better understanding of the motivations for engaging in unhealthy self-regulatory behaviors associated with body dissatisfaction. Individuals with greater contingent self-esteem are more likely to perceive their acceptance as conditional and contingent on meeting their perceived idealized body image standards (Crocker and Wolfe 2001; Kernis 2003). Individuals whose self-worth is more dependent upon external contingencies such as appearance are often preoccupied with achievements and social acceptance, and this recurrent self-evaluation process is associated with more negative mental health (e.g., Crocker et al. 2003; Deci and Ryan 1995).

Existing research on contingent self-esteem and body image concerns demonstrates that greater contingent self-esteem is a risk factor for engaging in appearance-related social comparisons, a process whereby individuals gather information that they use for self-evaluation (Bergstrom et al. 2004; Patrick et al. 2004). Patrick and colleagues (2004) examined the association between contingent self-esteem, negative affect, and self-perceptions of attractiveness. Results indicated that women higher in contingent self-esteem felt worse after making social comparisons in their daily lives, and this association was mediated by their tendency to make upward social comparisons. Previous research examining self-presentation theory has found that individuals who are concerned with their appearance and how others perceive them are more likely to engage in excessive exercise behaviors in order to lose weight compared to individuals who place less value in their appearance, and this relationship has been found to be stronger in females (Hausenblas et al. 2004). Although the aforementioned studies demonstrate an association between contingent self-esteem and

self-evaluation of physical appearance in females, research has yet to examine the impact of contingent self-esteem on body image concerns consistent with the drive for muscularity as well as concerns about weight and body shape among male and female college students.

Body mass index (BMI) has proven to be the most reliable biological correlate of body image concerns for females, and studies indicate an association between elevated BMI and greater body dissatisfaction and associated weight-loss strategies (McCabe and Ricciardelli 2003; Stice 2002). For females in Westernized society, researchers have proposed a larger body size is discrepant from the cultural norm for thinness, thus resulting in a more negative self-evaluation. The link between BMI and body dissatisfaction among males appears to be more complex, given variations in cultural norms related to both muscularity and leanness. Research suggests BMI is associated with attitudes and behaviors indicative of a desire to lose weight and gain muscle (McCabe and Ricciardelli 2004; Pingitore et al. 1997). Other research supports an association between lower BMI levels and efforts to gain weight and muscle among males (e.g., Jones and Crawford 2005). Based on these findings, consideration of BMI in the investigation of body image concerns among college students is warranted, particularly in light of gender differences in the association between BMI and body dissatisfaction.

### Current Study

The current investigation provides a context for examining the importance of self-perceptions of weight/body shape and muscularity in both males and female college students. This research extends previous findings indicating differences in the nature of body image dissatisfaction among males and females by examining the influence of contingent self-esteem. Although research has established a negative association between body image concerns and self-esteem among females, and to a lesser extent males, researchers have yet to examine the role of contingent self-esteem in body image concerns in males and females. Based on empirical research on contingent self-esteem and body image and sociocultural theoretical frameworks accounting for gender differences in body dissatisfaction, we developed the following hypotheses:

**Hypothesis 1** Consistent with previous research, we predicted females would report greater concerns about their weight/body shape, and conversely, males would have a stronger drive for muscularity than females, and we expected these differences to be present after controlling for BMI. Additionally, we expected females to re-

port greater contingent self-esteem compared to males.

**Hypothesis 2** In light of the evaluative nature of body image among both males and females, we predicted contingent self-esteem would be positively associated with greater weight/body shape concerns, while controlling for BMI.

**Hypothesis 3** Consistent with the relationship between contingent self-esteem and weight/body shape concerns (Hypothesis 2), we also expected greater contingent self-esteem to predict a stronger drive for muscularity while controlling for BMI.

**Hypothesis 4** Finally, while controlling for BMI, we expected the relationship between contingent self-esteem and body image concerns would be moderated by gender. Given the sociocultural pressure on females to attain a thin body type and males to achieve a muscular v-shaped figure, we predicted the relationship between contingent self-esteem and weight/body shape concerns would be more evident among females than males. In contrast, we predicted the relationship between contingent self-esteem and drive for muscularity would be primarily evident among males. Moreover, in light of research indicating males exhibit concerns about both weight/body shape and muscularity, we expected greater contingent self-esteem to be associated with greater weight/body shape concerns and drive for muscularity among males but only weight/body shape concerns among females.

### Method

#### Participants

Participants included 359 first-year college students who participated in a study assessing alcohol use and other health risk behaviors during their first-year in college. The participants in the current study were first-year students who initially completed a screening survey assessing alcohol use, and who screened in for participation to a larger longitudinal study and completed a baseline survey. Demographic characteristics for the final sample included 59.1% female and a mean age=18.47 years ( $SD=.58$ ,  $M=18.46$ ,  $SD=.59$  for women,  $M=18.49$ ,  $SD=.56$  for men). The sample of women was 65.4% Caucasian/White, 16.1% Asian, 1.4% African American, 1.4% American

Indian/Alaskan Native, and 10.3% unidentified/other. The sample of men was 62.6% Caucasian/White, 23.0% Asian, 1.4% African American, .7% American Indian/Alaskan Native, and 10.9% unidentified/other. Eight percent of women and 8.8% of men self-identified as being Hispanic/Latino. A chi-square analysis was conducted to evaluate potential ethnic differences among men and women, and results indicated that ethnicity did not vary significantly between men and women,  $\chi^2(6)=6.50, p=ns$ .

### Procedures

A random sample of 3,004 first-year college students between the ages of 17–19 was invited to participate in a study about alcohol use and college students. Students received a mailed letter and an email inviting their participation along with information about the research project, their rights as participants in research, protections for confidentiality, and incentives for participation. After providing online informed consent, students were routed to the online screening survey and completed a battery of measures about their engagement in health risk behaviors, such as alcohol and marijuana use, eating and dieting behavior, as well as other psychosocial questionnaires. Of the 3,004 students invited, 1,274 (42.4% completion rate) participated in the screening study and received ten dollars for their participation.

All students meeting eligibility criteria at screening (reporting 4/5+ standard drinks on one or more occasions in the previous month for women and men, respectively,  $n=388, 30.5%$ ) were invited to participate in the longitudinal study and completed a baseline survey immediately after the screening survey. Of the 388 students meeting criteria, 359 (92.5%) completed the baseline survey and were paid twenty dollars for their participation. All measures utilized in the present study were assessed at screening, except for contingent self-esteem which was assessed at the baseline survey, thus the final sample for the present analyses included 359 students completing items on both the screening and baseline survey. One student did not complete the Drive for Muscularity measure and was excluded from analyses with that measure. The University's Institutional Review Board provided approval for the study.

### Measure

#### *Demographics and Body Mass Index*

*Gender*, ethnicity, and participants' self-reported height and weight were collected. Body Mass Index (BMI) was calculated based on participants' height and weight ( $\text{kg}/\text{m}^2$ ).

*Contingent self-esteem* was assessed with the seventeen-item Contingent Self-Esteem Scale (Kernis 2003) measuring

the extent to which one's self-esteem was based on living up to expectations and standards with regard to issues such as physical appearance, performance, and gaining others' approval. Each participant rated the extent to which the seventeen statements were characteristic of him/herself from 1=not at all like me to 5=very much like me. Example items included "An important measure of my worth is how physically attractive I am" and "If I am told that I look good, I feel better about myself in general". Scores were computed as the mean of the seventeen items with reversed items recoded so that higher scores indicated greater contingent self-esteem ( $\alpha=.86$ ).

*Drive for Muscularity* was measured with the 15-item Drive for Muscularity Scale (DMS; McCreary and Sasse 2000). The DMS assesses people's perceptions of how muscular they are or desire to be, as well as behaviors they use to enhance their muscularity. Participants indicate the extent to which the fifteen items best apply to him/herself from 1 (never) to 6 (always). Example items included "I wish I were more muscular" and "I lift weights to build up muscle". Scores were computed by averaging the fifteen items with reversed items recoded so that higher scores indicated greater drive for muscularity ( $\alpha=.91$ ).

*Weight/Body Shape Concerns* were assessed with four questions from the Eating Disorders Diagnostic Scale (Stice et al. 2000) to assess participants' feelings about their weight and body. The four items were in reference to the past 3 months and asked "Have you felt fat", "Have you had a definite fear that you might gain weight or become fat", "Has your weight influenced how you think about (judge) yourself as a person", and "Has your shape influenced how you think about (judge) yourself as a person?" Response format ranged from 0=not at all to 6=extremely much. Scores were computed as the average of the four items, where higher scores indicated greater weight/body shape concerns ( $\alpha=.93$ ). Previous research has demonstrated the validity of this variable in predicting eating disorder symptoms among male and female college students (Whiteside et al. 2007).

## Results

### *Gender Differences*

In evaluating Hypothesis 1 regarding gender differences, we conducted a MANOVA examining mean differences in contingent self-esteem, weight/body shape concerns, and drive for muscularity as a function of gender, controlling for BMI. Results of this MANOVA revealed a significant multivariate effect indicating a significant gender difference across the three dependent variables, controlling for BMI, Wilks Lambda=.46,  $F(3, 351)=138.25, p<.001$ . Univariate follow-up tests revealed significant gender differences on

each of the three variables. The multivariate effect of BMI on the three dependent variables was also significant, Wilks  $\Lambda = .91$ ,  $F(3, 351) = 11.06$ ,  $p < .001$ . However, the results of the univariate follow-up tests indicated that BMI was only significantly associated with weight/body shape concerns and was not significantly associated with contingent self-esteem or drive for muscularity.

Table 1 presents means and standard deviation by gender. Table 2 presents correlations among contingent self-esteem, weight/body shape concerns, drive for muscularity, and BMI by gender. For men contingent self-esteem, weight/body shape concerns, and drive for muscularity were significantly correlated with one another whereas for women, among those variables, only the correlation between contingent self-esteem and weight/body shape concerns was significant. For both men and women BMI was correlated with weight/body shape concerns but no other variable. In addition we conducted *t*-tests to determine whether age and BMI differed as a function of gender. Men and women did not differ in age,  $t < 1$ , but the average BMI was significantly higher for men than women,  $t(355) = 2.71$ ,  $p < .01$ .

Hypothesis tests were conducted using multiple regression (Cohen et al. 2003). Effect sizes (*d*) were calculated using the formula  $2t/\sqrt{df}$  (Rosenthal and Rosnow 1991) and are presented in Tables 3 and 4. Effects in the .2 range are considered small, .5 medium, and .8 large (Cohen 1992). Given the correlation among variables, collinearity diagnostics were performed and included examination of tolerance values and variance inflation factors. The lowest tolerance value was .56 (VIF = 1.78). No collinearity statistics approached levels that would suggest potential problems (e.g., tolerance  $< .10$ , VIF  $> 10$ ; Cohen et al. 2003).

#### Contingent Self-esteem and Weight/Body Shape Concerns

Hierarchical multiple regression analysis (Cohen et al. 2003) was used to evaluate the relationship between contingent self-esteem and weight/body shape concerns (Hypothesis 2) as well as the extent to which this

**Table 1** Gender differences in contingent self-esteem, weight/body shape concerns, drive for muscularity, and BMI.

	Women ( <i>n</i> =212)		Men ( <i>n</i> =147)	
	Mean	SD	Mean	SD
Contingent self-esteem	3.38	.54	3.11	.54
Weight/body shape concerns	3.69	1.77	1.40	1.36
Drive for muscularity	1.52	.53	2.46	.82
BMI	22.33	3.79	23.36	3.08

Contingent self-esteem scores range from 1 (not at all like me) to 5 (very much like me); weight/body shape concerns scores range from 0 (not at all) to 6 (extremely much); drive for muscularity scores range from 1 (never) to 6 (always)

**Table 2** Correlations among contingent self-esteem, weight/body shape concerns, and drive for muscularity by gender.

Variable	1	2	3	4
1. Contingent self-esteem	–	.61*	.09	–.09
2. Weight/Shape concerns	.34*	–	.13	.25*
3. Drive for muscularity	.36*	.22**	–	.10**
4. BMI	–.06	.35*	–.04	–

Correlations for women are presented above the diagonal. Correlations for men are presented below the diagonal

\* $p < .001$ ; \*\* $p < .01$

relationship varied as a function of gender (Hypothesis 4). Weight/body shape concerns were specified as the dependent variable. Given the above noted gender difference in BMI and because it is important to account for actual size difference in considering body image related constructs, BMI was included as a covariate in step 1. Gender and contingent self-esteem were entered at step 2 and the two-way product term for these two variables was entered at step 3. Gender was dummy coded (women = 0, men = 1). Contingent self-esteem was mean centered to facilitate interaction interpretation. The interaction was examined with tests of simple slopes as detailed by Aiken and West (1991). Please see Table 3 for regression results.

Results indicated that being female and higher in contingent self-esteem were both uniquely associated with greater concerns about weight/body shape. A significant interaction further indicated that the relationship between contingent self-esteem and weight/body shape concerns varied as a function of gender. Figure 1 presents a graph of predicted cell means derived from the regression equation where high and low values of contingent self-esteem were specified as one standard deviation above and below the mean. Tests of simple slopes revealed that although the relationship between contingent self-esteem and weight/body shape concerns was stronger for women,  $t(352) = 12.32$ ,  $p < .001$ ,  $\beta = .58$ , than men,  $t(352) = 4.38$ ,  $p < .001$ ,  $\beta = .25$ , the relationship was significant for both women and men.

**Table 3** Regression results for weight/body shape concerns as a function of gender and contingent self-esteem.

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>d</i>
Step 1: $R^2 = .01$					
BMI	.05	.03	.08	1.56	.17
Step 2: $R^2 = .54$					
Gender	–1.98	.15	–.50	–13.24*	1.41
Contingent self-esteem	1.58	.13	.45	11.98*	1.28
Step 3: $R^2 = .56$					
Gender $\times$ contingent self-esteem	–1.15	.26	–.21	–4.42*	.47

\* $p < .001$

**Table 4** Regression results for drive for muscularity as a function of gender and contingent self-esteem.

Predictor	<i>B</i>	SE <i>B</i>	$\beta$	<i>t</i>	<i>d</i>
Step 1: $R^2 = .01$					
BMI	.02	.01	.10	1.98	.21
Step 2: $R^2 = .36$					
Gender	1.02	.07	.62	14.22*	1.51
Contingent self-esteem	.28	.06	.19	4.38*	.47
Step 3: $R^2 = .38$					
Gender $\times$ contingent self-esteem	.48	.13	.21	3.75*	.40

\* $p < .001$ 

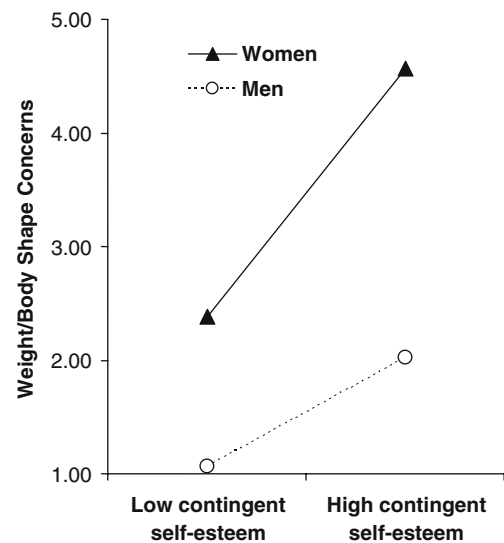
Given concerns regarding potential overlap between two of the items comprising the weight/body shape concerns scale and the measure of contingent self-esteem, we rescored this variable using the mean of only two items (Have you felt fat?; Have you had a definite fear that you might gain weight or become fat?) and reran the regression analysis. Results of this analysis provided identical conclusions; controlling for BMI, gender and contingent self-esteem were both significantly associated with weight/body shape concerns and the relationship between contingent self-esteem and weight/body shape concerns was significantly stronger among women than men (all  $p$ 's  $< .001$ ).

#### Contingent Self-esteem and Drive for Muscularity

We used the same hierarchical multiple regression approach described above to evaluate the relationships among gender, contingent self-esteem and drive for muscularity (Hypothesis 3) and to evaluate the extent to which the relationship between contingent self-esteem and drive for muscularity varied as a function of gender (Hypothesis 4). Regression results are presented in Table 4. Results indicated that being male and higher in contingent self-esteem were both uniquely associated with higher scores on drive for muscularity. The interaction between these two variables indicated that the relationship between them differed between men and women. Figure 2 presents predicted cell means. Tests of simple slopes indicated that among women there was no significant relationship between contingent self-esteem and drive for muscularity,  $t(351) = 1.08$ ,  $\beta = .06$ ,  $p = ns$ . In contrast, among men, there was a significant positive association between contingent self-esteem and drive for muscularity,  $t(351) = 5.73$ ,  $p < .001$ ,  $\beta = .39$ .

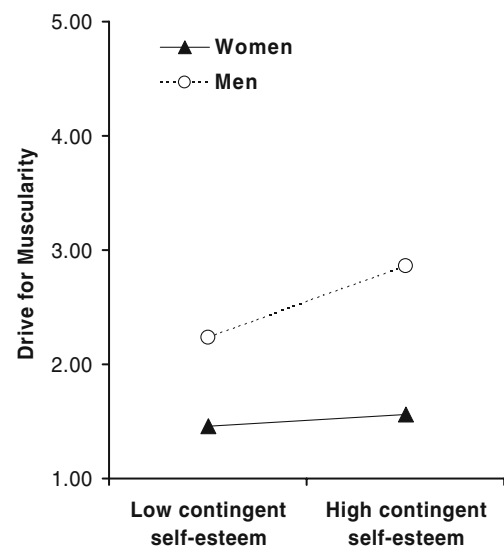
#### Discussion

The present research extends previous work investigating gender differences in body image concerns, as well as the influence of contingent self-esteem on body dissatisfaction



**Fig. 1** Weight/body shape concerns as a function of gender and contingent self-esteem. Note. The lines for contingent self-esteem represent regression slopes, where low and high point are 1 standard deviation below and above the mean respectively.

(Bergstrom et al. 2004; Patrick et al. 2004). Results were generally consistent with previous research indicating greater concerns about weight/body shape among female college students relative to males, and conversely, a greater drive for muscularity among males compared to females. Examination of the association between contingent self-esteem and weight/body shape concerns revealed that



**Fig. 2** Drive for muscularity as a function of gender and contingent self-esteem. Note. The lines for contingent self-esteem represent regression slopes, where low and high point are 1 standard deviation below and above the mean respectively.

greater contingent self-esteem is more strongly associated with greater weight/body shape concerns among females compared to males. This finding is not surprising given evidence suggesting that females experience greater body dissatisfaction related to perceived pressure to lose weight and attain a thin physique than males (e.g., Stice 2002). Yet, the significant positive relationship between contingent self-esteem and weight/body shape concerns in college males is noteworthy in that limited research has considered how the motivation to be thin impacts self-worth in males. An additional strength of the current study is that these results take into account BMI differences between males and females.

In light of research indicating males engage in risky weight-loss strategies (e.g., laxatives, diet pills), albeit to a lesser extent than females (ACHA 2006), consideration of the negative health outcomes related to efforts to lose weight and increase muscularity among male college students is warranted. Further examination of demographic and personality factors is warranted, as previous research indicates that relative to heterosexual men, gay men and men who score higher on scales measuring femininity endorse greater concerns about weight and body shape (e.g., Rothblum 2002; Tiggerman et al. 2007). It is also possible that male athletes who participate in sports that value a thinner, leaner body type (e.g., long distance running) or emphasize weight divisions (e.g., wrestling) may be motivated to attain a thinner physique to enhance their athletic performance (Davis 2002). In addition to demographic factors and athletic involvement, personality variables such as perfectionism and neuroticism have been shown to be associated with body image-related attitudes and behaviors consistent with the drive for thinness among male and female populations (Davis et al. 2005).

The examination of gender as a moderator in the association between contingent self-esteem and the drive for muscularity indicated that among males, greater contingent self-esteem is associated with a stronger drive for muscularity. In fact, contingent self-esteem was not significantly associated with drive for muscularity scores among female college students in our sample. The drive for muscularity may be associated with the “masculine self-concept”, and research indicates a positive association between levels of masculinity and the drive for muscularity (e.g., McCreary et al. 2005). McCreary and colleagues found that in addition to the drive for muscularity being positively associated with indices of masculinity, males who endorse a greater drive for muscularity also experience a greater gender-role conflict in their attempts to conform to society’s expectations for males (e.g., being successful, powerful, competitive). Given the association between contingent self-esteem and more negative mental health outcomes (Deci and Ryan 1995), examination of the

influence of gender-role conflict and contingent self-esteem on muscularity concerns and associated psychopathology in males is worthy of future research. Consideration of cognitive, motivational, and behavioral variables is necessary to inform interventions aimed at reducing the prevalence of unhealthy and potentially fatal methods for losing or gaining weight. In terms of the drive for muscularity in particular, greater attention should be given to excessive weight gain that may result from efforts to increase muscle mass (e.g., high caloric intake, high protein diet), in light of the increasing rates of obesity affecting young children and adolescents in this country (Cafri et al. 2005).

The results of the current study suggest the importance of considering contingent self-esteem when developing interventions to prevent the internalization of thinness and muscularity norms and subsequent body image disturbances. Researchers have suggested utilizing self-determination theory as a framework for the development of interventions aimed at enhancing “true” self-esteem to reduce the influence of external standards and expectations on one’s sense of self-worth (Pelletier et al. 2004; Vansteenkiste et al. 2005). Pelletier and colleagues (2004) examined the relationship between self-determination and symptoms associated with bulimia in a sample of female college students. More self-determined individuals indicated fewer tendencies to perceive sociocultural pressures about body image and were less likely to endorse society’s positive beliefs about thinness, and reported fewer bulimic symptoms. Conversely, those adopting more extrinsic forms of motivation (i.e., less self-determined individuals) were more likely to internalize societal pressures to be thin, report greater body dissatisfaction, as well as more symptoms associated with bulimia.

Although this investigation provides a preliminary framework for examining relations between contingent self-esteem and gender differences in body image concerns, there are several limitations to consider. The response rate to our initial screening survey was 42.4%, and the majority of the participants who completed the survey were 18 years of age, which may limit the generalizability of the results of this study. However the response rate in this study was similar to other research using internet based surveys of random samples which range from 19–63% (McCabe et al. 2002; McCabe et al. 2005; Thombs et al. 2005). Another limitation concerns the use self-report measures assessing the cognitive and affective nature of participant’s body image concerns. Although we controlled for body mass index (BMI) in all analyses, consideration of fat free mass index (FFMI) would provide a more rigorous methodological approach for examining relations between body dissatisfaction and muscularity. In order to assess the perceptual nature of body dissatisfaction, the Somatomorphic Matrix (SMM; Gruber et al. 2000) allows for the study of body image perceptions according to separate axes for both fat and

muscularity. Consequently, further investigation of perceptual distortions regarding body size and muscularity would provide a context for examining the role of discrepancies between one's perceived and ideal body type in the development and maintenance of body image pathology. Also, future research should include other more empirically supported scales assessing concerns about weight/body shape and thinness in relation to eating disorder symptoms among males and females (e.g., Eating Disorder Inventory-2; Garner 1991).

Another methodological limitation concerns the use of a global measure of contingent self-esteem, as research indicates that levels of contingent self-esteem vary across different domains (e.g., Crocker and Wolfe 2001). Thus, individuals with greater contingent self-esteem may view their physical appearance as most influential for their self-worth, compared to one who values the importance of academic success, power, or social acceptance. Further research is warranted to examine whether domain-specific measures of contingent self-esteem provide a greater understanding of the motivations for attaining a thin or muscular build. For example, given the association between masculinity and muscularity, motivations to achieve power and success may also contribute to a greater drive for muscularity. In achievement domains such as athletics, research has demonstrated a significant relationship between goal orientation and body image for males (e.g., Newton et al. 2004). Newton and colleagues (2004) found that only ego orientation (focus on winning) in males was significantly associated with physical self-worth and body attractiveness, suggesting that males' focus on physical appearance may be more apparent in competitive domains emphasizing physical performance relative to others. For females, body image concerns appear more strongly associated with global self-evaluation and appearance-related domains, and researchers have referred have described a "normative discontent" indicative of females' pervasive concerns about their weight and body shape (Cash and Pruzinsky 2002; Crocker et al. 2003).

An additional limitation is that data reported in the current study were collected from primarily Caucasian, heavy-drinking college students attending a single university, limiting the generalizability of the findings. A pertinent question for future research is whether non-heavy drinking college students report comparable concerns about body image, in terms of weight/body shape and muscularity. Although concerns about physical appearance in terms of weight and shape may not intuitively be related to problem drinking among college students, some research suggests a positive association between disordered eating and problematic drinking, particularly among females (Anderson et al. 2005; Dunn et al. 2002). Although less research has investigated associations between body image and alcohol

use among college males, a national study indicated among college students reporting lifetime non-medical use of anabolic steroids, the majority being males, 33% met criteria for past year DSM-IV criteria for alcohol dependence compared to 6% of non-steroid users (McCabe et al. 2007). Conformity to traditional masculinity norms has also been identified as a risk factor for higher drive for muscularity scores as well as alcohol consumption among males, particularly among those experiencing gender role conflict or stress (McCreary et al. 2005).

Additionally, in light of a greater focus on body image in Western cultures, an examination of the influence of contingent self-esteem on weight/body shape and muscularity concerns across different racial and ethnic groups is worthy of further research. Finally, the cross-sectional data reported here prevent making causal statements about relationships between contingent self-esteem and body dissatisfaction. Despite these limitations, the current findings add significantly to the literature on gender differences in body image concerns, and provide evidence for examining contingent self-esteem as contributing to body dissatisfaction in females and males. In light of the strong association between body dissatisfaction and psychopathology and unhealthy body-change strategies, a better understanding of etiological factors and outcomes associated with contingent self-esteem and body image is necessary. Moreover, intervention development would be further informed by greater understanding of protective factors (e.g., self-determination) seemingly associated with greater body satisfaction among male and female college students, given the positive relationship between body satisfaction and psychological health (Cash and Pruzinsky 2002; Stice 2002). The results of the current investigation add to existing evidence which corrects the notion that body image concerns primarily affect females, and suggest that muscularity and to a lesser extent, concerns about weight/body shape, are relevant to male college students.

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