

His Biceps Become Him: A Test of Objectification Theory's Application to Drive for Muscularity and Propensity for Steroid Use in College Men

Mike C. Parent and Bonnie Moradi
University of Florida

Men's body image problems may manifest as an unhealthy drive for muscularity and propensity to use anabolic-androgenic steroids (AAS). Aspects of objectification theory were integrated with literature on men's drive for muscularity and AAS use to identify correlates of these problems. The resultant model was tested with path analyses of data from 270 college men. First, consistent with prior research on objectification theory, results indicated that body surveillance partially mediated the link of internalization of cultural standards of attractiveness with body shame. Second, positive outcome expectation for AAS use partially mediated the link of drive for muscularity with intention to use AAS. Third, drive for muscularity partially mediated the links of internalization with outcome expectation for AAS use and intention to use AAS. Finally, outcome expectation for AAS use was an additional partial mediator of the link of internalization with intention to use AAS. Body surveillance and body shame did not have unique direct or mediated relations with drive for muscularity or AAS variables. These findings point to internalization of cultural standards of attractiveness as the nexus of overlap between the objectification theory variables and men's drive for muscularity and propensity to use AAS.

Keywords: objectification theory, drive for muscularity, steroid use, self-objectification, body surveillance

Preoccupation over body image—specifically, drive for a muscular physique—may be present in many boys and men (e.g., Cohane & Pope, 2001; Levesque & Vichesky, 2006). College-age men may be at particular risk for muscularity-focused body image concerns, and an increase in such concerns has been noted in college counseling centers (e.g., Morgan, 2002; Olivardia, Pope, & Hudson, 2000). Drive for muscularity has been associated with mental health problems, including eating disorder symptoms, body dysmorphia, low body esteem, and depression (Olivardia, 2001; Olivardia, Pope, Borowiecki, & Cohane, 2004). Men's drive for muscularity also has been linked with potentially dangerous use and abuse of anabolic-androgenic steroids (AAS; R. Peters, Copeland, & Dillon, 1999; Wright, Grogan, & Hunter, 2000). Thus, identifying correlates of drive for muscularity and propensity for AAS use is important for counseling psychology research and practice related to men's body image problems, mental health, and well-being.

Objectification theory (Fredrickson & Roberts, 1997) posits a model of relations among internalization of cultural standards of attractiveness, body surveillance for adherence to those standards, and body shame for failing to meet those standards, as correlates of mental health problems and unhealthy body modification strategies. This model has been applied in research on body image and mental health problems with women and men (for a review, see

Moradi & Huang, 2008). Building on objectification theory literature as well as research on drive for muscularity and propensity to use AAS, the present study sought to evaluate the applicability of relations specified in objectification theory (involving internalization of cultural standards of attractiveness, body surveillance, and body shame) to understanding drive for muscularity and propensity to use AAS among college men. We focused on college men because drive for muscularity seems particularly salient in this group: The average age of onset for muscularity-focused body dysmorphia was estimated to be 19.4 years (Olivardia et al., 2000), approximately one third of college men reported excessive exercise concerns (O'Dea & Abraham, 2002), and clinicians have noted increases in the numbers of men presenting with muscularity-related body image concerns at college counseling centers (Morgan, 2002).

Objectification Theory Overview and Construct Definition

Originally grounded in the experiences of women, objectification theory (Fredrickson & Roberts, 1997) posits that sexual objectification of women's bodies is omnipresent and can be internalized. Internalization of cultural standards of attractiveness occurs through constant exposure to socialization messages that promote compliance and identification with those messages. Such internalization can promote the adoption of an observer's perspective on one's own body, or self-objectification, which is manifested as persistent body surveillance. Body surveillance involves habitual monitoring and comparison of one's body against the internalized standard of attractiveness with a focus on how one's body looks rather than how it feels or functions. Body surveillance

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Mike C. Parent and Bonnie Moradi, Department of Psychology, University of Florida.

Correspondence concerning this article should be addressed to Mike C. Parent, Department of Psychology, University of Florida, Gainesville, FL 32611. E-mail: michael.parent@ufl.edu

can, in turn, result in feelings of body shame for not meeting the (generally unattainable) cultural standards of attractiveness.

Research using cross-sectional and longitudinal data has supported a model of relations among these three objectification theory variables, such that internalization is related positively to body surveillance and body shame and body surveillance also has a unique positive relation with body shame. Body shame often mediates relations among objectification theory variables with outcomes variables, although both internalization and body surveillance often have unique additional relations with outcomes (for a review, see Moradi & Huang, 2008). This chain of relations is posited to underlie unhealthy efforts to alter one's appearance to comply with the internalized ideal; such efforts could include excessive dieting and exercise, eating disorders, and body-modifying surgery or drug use. An extensive body of literature has tested this model and extended its application to women of diverse racial and ethnic backgrounds, ability statuses, and sexual orientation identities, and aspects of the model are also gaining support in emerging research with men (Moradi & Huang, 2008). However, evaluation of the model's applicability to men's body image concerns is still needed.

Objectification Theory's Application to Men

In considering the application of objectification theory to men, it is important to acknowledge that societal standards that idealize thinness and vulnerability as attractive for women and muscularity and power as attractive for men serve to reinforce patriarchal power structures that oppress and disempower women relative to men. Nevertheless, internalization of cultural standards of attractiveness appears to have negative correlates for men. For instance, in samples of mostly White men, consumption of objectifying media and internalization of cultural standards of attractiveness are linked with drive for muscularity, depression, body dissatisfaction, and lower self-esteem (e.g., Daniel & Bridges, 2010; Giles & Close, 2008; Humphreys & Paxton, 2004; Leit, Gray, & Pope, 2002; Levesque & Vichesky, 2006). Thus, the basic premise of objectification theory, that objectifying sociocultural pressures and their internalization may promote body image problems, may apply to men. Indeed, tenets of objectification theory have received some support across samples of mostly White men. In such samples, internalization of cultural standards of attractiveness, body surveillance, and body shame are related positively to one another and to body image problems (e.g., Hallsworth, Wade, & Tiggemann, 2005; Knauss, Paxton, & Alsaker, 2008; Martins, Tiggemann, & Kirkbride, 2007; Tiggemann & Kuring, 2004). Germane to the present study, internalization of cultural standards of attractiveness (or conceptually similar variables), body surveillance, and body shame have been correlated positively with drive for muscularity in some studies (e.g., Duggan & McCreary, 2004; Giles & Close, 2008; Hallsworth et al., 2005; Hatoum & Belle, 2004). Further examination of the theorized unique and mediated relations of these variables is needed.

In research with men, support for the mediating role of body shame has varied depending on the criterion variable. For instance, in a sample of Swiss boys, body shame partially mediated the link of body surveillance with body dissatisfaction as posited in objectification theory (Knauss et al., 2008). Among primarily White and heterosexual U.S. college men, body shame was unrelated to drive

for muscularity (Daniel & Bridges, 2010). Martins et al.'s (2007) data with gay Australian men suggested that body shame partially mediated the link of global self-objectification with drive for thinness but did not mediate the link with drive for muscularity; the significance of mediation was not tested in their data with heterosexual men. Thus, there is ambiguity about the posited mediating role of body shame when men's drive for muscularity is the criterion variable. As such, research on the application of objectification theory to understanding men's drive for muscularity and propensity for AAS use must evaluate the posited mediating role of body shame.

Drive for Muscularity and AAS

Although cultural variability in body image concerns is important to acknowledge (Yang, Gray, & Pope, 2005), in sociocultural contexts that idealize men's muscularity, men's body image problems may manifest as a drive for muscularity (e.g., McCreary & Sasse, 2000). Indeed, many men rate a muscular physique as their personal ideal (Lynch & Zellner, 1999; Raudenbush & Meyer, 2003). Drive for muscularity, in turn, can promote unhealthy body modification strategies, among which use of AAS to muscularize the body presents significant risks to men's mental and physical health (Kanayama, Hudson, & Pope, 2008).

AAS are hormones, including testosterone, that exhibit anabolic (i.e., muscle building) and androgenic (i.e., masculinizing) properties (Clark & Henderson, 2003). In concentrations beyond normal physiological levels, AAS allow for accelerated increase in muscle size, muscle strength, and general athletic performance (Gonzalez, McLachlan, & Keaney, 2001). Use of AAS may have negative consequences for physical health (e.g., hypertension, arrhythmia, cardiomyopathy) and psychological health (e.g., hypomania, aggression, depression, suicidal ideation and action; Kanayama et al., 2008). Still other risks are posed by indirect threats, such as infection from sharing needles or improper injection. In a survey of 500 AAS users, about 13% reported some unsafe AAS use practices (Parkinson & Evans, 2006).

Among adult men, prevalence of AAS use is high among professional athletes (e.g., 30% for college football players, Gaphery, 1995; 55% for national-level powerlifters, Yesalis et al., 1988). Yet, a large number of AAS users (perhaps the majority; see Parkinson & Evans, 2006; R. Peters et al., 1999) are not professional bodybuilders or athletes but rather men who simply wish to become more muscular. Indeed, the typical outcome desired from AAS use is not to increase physical strength—which may be viewed as a utilitarian motive for athletes—but rather to improve physical appearance or attractiveness, increase confidence, and increase physical size (Blouin & Goldfield, 1995; R. Peters et al., 1999; Wright et al., 2000; Wright, Grogan, & Hunter, 2001). Thus, men who are driven to attain a muscular physique may want to use AAS to the extent that they believe such use will help them attain their desired physical appearance.

As such, two aspects of propensity to use AAS are important to consider: positive outcome expectation for AAS use and intention to use AAS. Outcome expectation reflects beliefs about the consequences of carrying out a behavior, and it guides intention and behavior to be congruent with the expected outcome (Bandura, 1977). Within the substance use literature, positive outcome expectation is viewed as an important intervening variable linking

risk factors with intention to use and with actual use of substances (Leventhal & Schmitz, 2006; Oei & Morawska, 2004). In addition, within the substance use literature, intention to use substances is a critical predictor of actual use and thus itself is examined as an important criterion variable (e.g., Marcoux & Shope, 1997). Identifying the correlates of intention to use substances is particularly important for reducing or reversing such intent in order to prevent actual use of substances; such a prevention focus has been called for in counseling psychology (Romano & Hage, 2000).

In the present investigation, positive outcome expectation reflects the belief that AAS use will help the user achieve his desired muscular physique. Based on the propositions that outcome expectation guides intent (Bandura, 1977) and positive outcome expectation links risk factors with intent (Leventhal & Schmitz, 2006; Oei & Morawska, 2004), positive outcome expectation is posited to mediate the relation of drive for muscularity (i.e., risk factor) with intention to use AAS. To evaluate the possibility that preparatory steps that mark intention to use AAS (e.g., gathering information on how to obtain AAS) might promote positive outcome expectations for AAS use, we also explore an alternative model in which intent to use mediates the link of drive for muscularity with positive outcome expectation.

Present Study

The present study evaluates the applicability of relations posited in objectification theory, including the hypothesized mediating role of body shame, to men's drive for muscularity and propensity to use AAS. The model depicted in Figure 1 outlines the direct and indirect relations among internalization, body surveillance, body shame, and drive for muscularity that are based on objectification theory literature (Moradi & Huang, 2008). The additional relations among drive for muscularity, outcome expectation for AAS use, and intention to use AAS are grounded in AAS and substance use literatures (e.g., Grogan, Shepherd, Evans, Wright, & Hunter, 2006; Jones, Corbin, & Fromme, 2001; Leventhal & Schmitz, 2006; R. Peters et al., 1999; Wright et al., 2000). The model tests the following hypotheses:

1. Internalization of cultural standards of attractiveness, body surveillance, and body shame will have positive direct and indirect relations with drive for muscularity.

- 1a. The indirect relations will include body surveillance mediating the relations of internalization with body shame and drive for muscularity.
- 1b. Body shame will mediate the relations of body surveillance and internalization with drive for muscularity.
2. Drive for muscularity will mediate the positive relations of internalization, body surveillance, and body shame with outcome expectation for AAS use.
3. Outcome expectation will mediate the positive relations of drive for muscularity with intention to use AAS.

Method

Participants and Procedure

Analyses were conducted with data from 270 college men who ranged in age from 18 to 29 years ($M = 19.30$ years, $SD = 1.84$, $Mdn = 19.00$; two participants did not report their age). Of these participants, 59% identified as White/Caucasian, 17% as Hispanic/Latino, 10% as Asian American/Pacific Islander, 9% as African American/Black, 3% as Biracial/Multiracial, 1% as Arab American/Middle Eastern, less than 1% as American Indian/Native American, and less than 1% as Indian (1% did not report their race/ethnicity). Participants' self-identified sexual orientation was assessed on a continuum, consistent with conceptualizations of sexual orientation as a continuous construct (e.g., Klein, 1993); 88% of participants identified as exclusively heterosexual/straight, 8% as mostly heterosexual/straight, 2% as exclusively homosexual/gay, 1% as mostly homosexual/gay, and 1% as bisexual; 2% listed an identification outside of these options (e.g., asexual, n/a). Four participants (1.5%) disclosed formerly or currently using AAS; this rate approximates AAS use prevalence of about 1% reported in data collected from over 50,000 college students (McCabe, Brower, West, Nelson, & Wechsler, 2007).

Participants were recruited from psychology courses and the participant pool at a large public university in the southeastern United States. Students were informed that the study was a survey about men's health behaviors and involved completing a web-based survey. They were provided a web link to the survey, which was hosted through the authors' institution. Upon accessing the

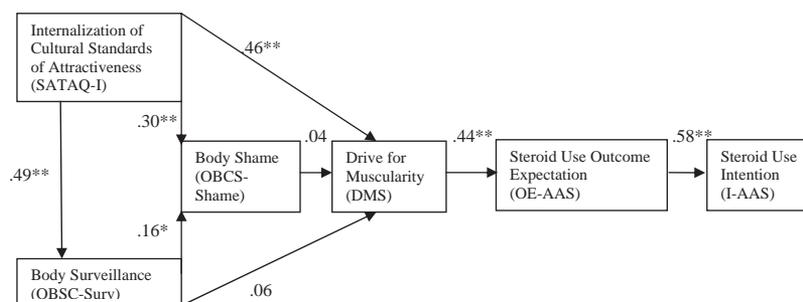


Figure 1. Empirical model of proposed relations. Values represent the standardized path coefficients. SATAQ-I = Internalization subscale of the Sociocultural Attitudes Toward Appearance Questionnaire; OBSC-Surv = Body Surveillance subscale of the Objectified Body Consciousness Scale; OBCS-Shame = Body Shame subscale of the Objectified Body Consciousness Scale; DMS = Drive for Muscularity Scale; OE-AAS = outcome expectation for anabolic-androgenic steroids [AAS]; I-AAS = intention to use AAS. * $p < .05$. ** $p < .01$.

link, participants viewed the informed consent and institutional review board approval; they clicked a link indicating their agreement to participate. Upon completing the survey, participants viewed a debriefing sheet that thanked them and reiterated the researchers' contact information. Participants received course credit as allowed by their instructors.

Instruments

Internalization of cultural standards of attractiveness. Internalization of cultural standards of attractiveness was assessed with Morry and Staska's (2001) revision of the Internalization subscale of the Sociocultural Attitudes Toward Appearance Questionnaire (SATAQ-I; Heinberg, Thompson, & Stormer, 1995). Morry and Staska modified thinness-focused items to assess cultural standards of muscularity for men (e.g., changing "Clothes look better on thin models" to "Clothes look better on muscular/fit models"). This version of the SATAQ-I has eight items (sample item: "I do not wish to look like models in magazines," reverse coded) that are rated on a 5-point response scale (0 = *completely disagree*, 4 = *completely agree*). Appropriate items are reverse scored and item ratings are averaged, with higher scores indicating greater internalization of cultural standards of attractiveness. In Morry and Staska's sample of 61 undergraduate men, SATAQ-I scores were associated positively with consumption of fitness magazines, feelings of being overweight, and concern with bodily appearance over bodily function and health, and Cronbach's alpha was .78 for SATAQ-I items.

Body surveillance. We used the Body Surveillance subscale of the Objectified Body Consciousness Scale (OBCS-Surv; McKinley & Hyde, 1996) to assess habitual appearance monitoring and concern about bodily appearance over function. The OBCS-Surv contains eight items (sample item: "I am more concerned with what my body can do than how it looks," reverse coded) that are rated on a 7-point scale (0 = *strongly disagree*, 6 = *strongly agree*; participants can select *not applicable* if an item does not apply to them). Following McKinley and Hyde's scoring procedures, appropriate items are reverse scored and ratings of applicable items are averaged; higher scores indicate greater body surveillance. Validity of the OBCS-Surv scores was supported through positive relations with men's appearance anxiety and body dissatisfaction (Hallsworth et al., 2005; Martins et al., 2007). OBCS-Surv items have yielded Cronbach's alphas of .81 for male bodybuilders, weight trainers, and nonathletes; .76 for gay men; and .83 for heterosexual men (Hallsworth et al., 2005; Martins et al., 2007).

Body shame. Shame or guilt for falling short of internalized standards of attractiveness was assessed with the Body Shame subscale of the OBCS (OBCS-Shame; McKinley & Hyde, 1996). The OBCS-Shame contains eight items (sample item: "I feel like I must be a bad person when I don't look as good as I could") that are rated on a 7-point scale (0 = *strongly disagree*, 6 = *strongly agree*; participants can select *not applicable* if an item does not apply to them). Following McKinley and Hyde's scoring procedures, appropriate items are reverse scored and ratings of applicable items are averaged; higher scores indicate greater body surveillance. Validity of the OBCS-Shame scores was supported through positive relations with men's body dissatisfaction, depression, and bulimia symptoms (Hallsworth et al., 2005). OBCS-Shame items have yielded Cronbach's alphas of .69 for male

bodybuilders, weight trainers, and nonathletes; .81 for gay men; and .70 for heterosexual men (Hallsworth et al., 2005; Martins et al., 2007).

Drive for muscularity. We used the Drive for Muscularity Scale (DMS; McCreary & Sasse, 2000) to assess participant's desire to achieve a muscular physique. The DMS contains 15 items that measure desire to be more muscular (sample item: "I wish that I were more muscular"). Items are rated on a 6-point response scale (0 = *never*, 5 = *always*). Item ratings are averaged, with higher scores indicating greater drive for muscularity. In prior samples of men, validity of overall DMS scores has been supported through their positive associations with depressive symptoms, appearance anxiety, neuroticism, and perfectionism (McCreary, 2007). In his review of research using the DMS, McCreary (2007) reported that across samples of mostly college men, Cronbach's alphas for DMS items ranged from .85 to .91.

Outcome expectation for AAS use and intention to use AAS. Due to the lack of appropriate existing measures, two prior studies that delineated expectations of AAS users were employed to develop a measure of outcome expectation for AAS use (OE-AAS). In these studies, AAS users reported that the outcome expectations motivating their AAS use and weight training were improvements in appearance, size, confidence, and physical performance (R. Peters et al., 1999; Wright et al., 2000). Thus, four items were developed to assess these specific outcome expectations: "If I used anabolic steroids, I would [be more confident] [feel better about my fitness level] [feel better about how I look] [feel more attractive]." Responses were made on a 7-point scale (0 = *very untrue*, 7 = *very true*). Item ratings were averaged, with higher scores indicating more positive outcome expectation for AAS use. Due to the lack of appropriate existing measures, two prior studies that explored precursor steps to initiating AAS use were used to develop a measure of intention to use AAS (I-AAS). These studies indicated that AAS users engaged in independent research and gathered information about how to obtain and use AAS (e.g., finding out how to obtain or administer steroids; Grogan et al., 2006; Maycock & Howatt, 2005). Five items were developed to reflect these indicators of intention to use AAS: "I plan to use anabolic steroids in the future," "I have looked up information on types of steroids and how to use them," "I have looked up information on how to obtain steroids," "I've talked with people who use steroids about getting or using steroids," and "I've learned about getting and using steroids." Responses were made on a 7-point scale, (0 = *very untrue*, 7 = *very true*). Item ratings were averaged, with higher scores indicating greater intent to use AAS.

Content validity of the OE-AAS and I-AAS items can be inferred from the fact that they reflected themes from studies delineating expectations for AAS use and behaviors associated with an intention to use AAS. Furthermore, a principal-axis factor analysis with promax rotation of the OE-AAS and I-AAS items was conducted to evaluate their distinctiveness. Data met guidelines for sample size and factorability (i.e., Kaiser-Meyer-Olkin statistic and Bartlett's test of sphericity; Tabachnick & Fidell, 1996). Eigenvalues greater than one, scree plot, and a parallel analysis (Hayton, Allen, & Scarpello, 2004) suggested retention of two factors. The first factor was composed of the four I-AAS items (pattern loadings of .67 to .98, cross-loadings \leq .28), accounting for 57% of initial variance in the data. The second factor was

composed of the five OE-AAS items (pattern loadings of .36 to .92, cross-loadings \leq .19) and accounted for 15% of additional variance in the data. The correlation between the two factors was .59. These findings support use of the OE-AAS and I-AAS as measures of distinct but correlated constructs.

Preliminary Data Screening

The initial data set consisted of 292 cases. Following Schlomer, Bauman, and Card's (2010) recommendations, we examined missingness at the item and scale levels to determine an appropriate approach for handling missing data; 13 cases were missing all data for this study, and three were missing more than 20% of items on more than one measure. We deemed imputation methods to be questionable due to the large amount of missing data for these 16 cases. Among the remaining cases, 13 had one missing data point and 1 had two missing data points. For these 14 cases, we conducted ipsative mean substitution (Dodeen, 2003) using the mean of each individual's nonmissing data points for that subscale. Ipsative mean substitution has been demonstrated to function adequately when the volume of missing data is low and measures demonstrate acceptable reliability (Dodeen, 2003; Schafer & Graham, 2002), as was the case in the present data set. The data met guidelines for univariate normality as outlined by Weston and Gore (2006). Six participants were identified as multivariate outliers due to having Mahalanobis distances significant at $p < .001$. Examination of the hypothesized model with these participants in the sample yielded generally small increases in parameter estimates relative to the sample without these participants ($\beta_{\Delta_i} = .01-.04$, $M_{\Delta_i} = .02$, $SD_{\Delta_i} = .01$). Because multivariate outliers violate assumptions of maximum likelihood estimation (Tabachnick & Fidell, 1996) and because removing these cases resulted in negligible changes in parameter estimates, we conducted the analyses without the six multivariate outliers. Thus, the sample size for analyses was 270.

Results

Means, standard deviations, Cronbach's alphas, and intercorrelations of the variables of interest are presented in Table 1. In general, the sample's means for internalization, body surveillance, body shame, and drive for muscularity were similar to those reported in prior samples of men (Duggan & McCreary, 2004; Hallsworth et al., 2005; Morry & Staska, 2001). All variables were

correlated significantly with one another with the exception that body shame was not correlated significantly with intention to use AAS.

To explore potential similarities or differences across sexual and racial/ethnic minority and nonminority status groups, we conducted multivariate analyses of variance to test for differences on the variables in the hypothesized model (a) between exclusively heterosexual and nonexclusively heterosexual participants and (b) between White and non-White participants. Results indicated no significant overall mean difference on the set of variables of interest and no violation of equality of covariance matrices across sexual or racial/ethnic minority and nonminority status groups.

Model Evaluation

A path analysis of the hypothesized model was conducted with Mplus Version 5.2 (Muthén & Muthén, 2007) and maximum likelihood estimation. Manifest rather than latent variables were used because internal consistencies for items composing the manifest variable scores were acceptable (see Ponterotto & Ruckdeschel, 2007), thus reducing potential benefits of employing item parcels and latent variable modeling to estimate error. Indeed, scores on the measures used in the present study are typically used as manifest indicators in prior research. To evaluate model fit, we report the chi-square statistic, the comparative fit index (CFI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA) with 90% confidence interval (Martens, 2005; Weston & Gore, 2006). Criteria for acceptable fit have ranged from $CFI \geq .90$ and $RMSEA$ and $SRMR \leq .10$ to more conservative criteria of $CFI \geq .95$, $RMSEA \leq .06$, and $SRMR \leq .08$ (e.g., Hu & Bentler, 1999; Quintana & Maxwell, 1999), though model evaluation should take into account sample size, degrees of freedom, and theoretical bases for the models rather than apply fit index cutoffs as "golden rules" (e.g., Marsh, Hau, & Wen, 2004; Weston & Gore, 2006). As testing mediation using bootstrap procedures has been recommended (Mallinckrodt, Abraham, Wei, & Russell, 2006), we ran the model with 10,000 bootstrap samples to examine the significance of indirect effects. We report the hypothesized standardized indirect path coefficients and errors, bootstrap unstandardized indirect path coefficients and errors, and 95% bias-corrected confidence intervals as recommended (Williams & MacKinnon, 2008). Indirect effects are significant and indicate mediation if their 95%

Table 1
Intercorrelations and Descriptive Statistics for the Variables of Interest

Variable	2	3	4	5	6	Possible range	<i>M</i>	<i>SD</i>	α
1. SATAQ-I	.49**	.38**	.50**	.35**	.24**	0-4	1.75	0.71	.84
2. OBCS-Surv		.31**	.30**	.28**	.15*	0-6	2.76	0.81	.84
3. OBCS-Shame			.23**	.17**	.12	0-6	1.79	0.77	.77
4. DMS				.44**	.37**	0-5	1.76	0.79	.87
5. OE-AAS					.58**	0-7	0.73	1.27	.94
6. I-AAS					—	0-7	0.50	0.98	.84

Note. SATAQ-I = Internalization subscale of the Sociocultural Attitudes Toward Appearance Questionnaire; OBCS-Surv = Body Surveillance subscale of the Objectified Body Consciousness Scale; OBCS-Shame = Body Shame subscale of the Objectified Body Consciousness Scale; DMS = Drive for Muscularity Scale; OE-AAS = outcome expectation for anabolic-androgenic steroids [AAS]; I-AAS = intention to use AAS.

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

confidence interval does not include zero (see Mallinckrodt et al., 2006).

Results indicated that the proposed model fit the data well, $\chi^2(7, N = 270) = 18.19, p = .01, CFI = 0.97, SRMR = .053, RMSEA = .077, 90\% CI [.034, .121]$. The model accounted for 24% of the variance in body surveillance scores, 16% of the variance in body shame scores, 26% of the variance in drive for muscularity scores, 20% of the variance in outcome expectation for AAS use scores, and 34% of the variance in intention to use AAS scores. Standardized parameter estimates are presented in Figure 1, and indirect effects are summarized in Table 2.

Consistent with Hypothesis 1, unique positive direct relations emerged among internalization of cultural standards of attractiveness, body surveillance, and body shame as well as between internalization and drive for muscularity. However, unique direct relations of body shame and body surveillance with drive for muscularity were not significant. Consistent with Hypothesis 1a, body surveillance mediated the relation of internalization of cultural standards of attractiveness with body shame; inconsistent with this hypothesis, however, body surveillance did not mediate the link of internalization with drive for muscularity. Results also were inconsistent with Hypothesis 1b in that body shame did not mediate the links of internalization and body surveillance with drive for muscularity. Results were partly consistent with Hypothesis 2 in that drive for muscularity mediated the relation of internalization, but not body surveillance or body shame, with outcome expectation for AAS use. Finally, consistent with Hypothesis 3, outcome expectation for AAS use mediated the relation of drive for muscularity with intention to use AAS. This significant indirect relation, along with the significant indirect relation from internal-

ization through drive for muscularity to outcome expectation for AAS, suggested the possibility that internalization might have a significant indirect link with intention to use AAS through drive for muscularity and outcome expectation for AAS use; an auxiliary test indicated that the indirect effect through this series of relations was significant (see Table 2).

We also tested an alternative model in which the directionality of the AAS use variables was reversed, such that I-AAS mediated the relationship between DMS and OE-AAS (rather than OE-AAS mediating the relationship between DMS and I-AAS). This was a viable alternative model because engaging in behaviors precursive to AAS use could potentially increase an individual's outcome expectations for AAS use. However, fit indices for this model were poorer than those of the hypothesized model, $\chi^2(7, N = 270) = 38.64, p = .001, CFI = 0.92, SRMR = .082, RMSEA = .129, 90\% CI [.091, .171]$. In this model, 13% of the variance in I-AAS and 34% of the variance in OE-AAS was accounted for; the standardized path coefficient from DMS to I-AAS was .37 and from I-AAS to OE-AAS was .58; the variance accounted for in all other variables and the magnitude of other path coefficients were the same as in the previous model.

Finally, based on suggestions to test partial mediation in addition to full mediation (e.g., Martens, 2005; Weston & Gore, 2006), we tested drive for muscularity as a partial mediator of the link between internalization and outcome expectation for AAS use and tested outcome expectation for AAS use as a partial mediator of the link between drive for muscularity and intention to use AAS. Support for such a model would suggest focusing intervention efforts on the predictor variables in addition to the proposed mediators. To test the partial mediation model, we estimated the

Table 2
Bootstrap Analysis of Magnitude and Significance of Indirect Effects

Hypothesis	Predictor	Mediator(s)	Criterion	Standardized indirect effect		Bootstrap estimate		95% CI	
				β	SE	B	SE	Lower bound	Upper bound
Original model									
1a	SATAQ-I	OBCS-Surv	OBCS-Shame	.077	0.036	0.083	0.039	0.011	0.166*
1a	SATAQ-I	OBCS-Surv	DMS	.031	0.032	0.035	0.036	-0.029	0.114
1b	SATAQ-I	OBCS-Shame	DMS	.011	0.019	0.013	0.021	-0.026	0.056
1b	OBCS-Surv	OBCS-Shame	DMS	.006	0.010	0.006	0.010	-0.010	0.032
2	SATAQ-I	DMS	OE-AAS	.202	0.037	0.361	0.073	0.233	0.524*
2	OBCS-Surv	DMS	OE-AAS	.028	0.028	0.044	0.045	-0.038	0.139
2	OBCS-Shame	DMS	OE-AAS	.017	0.026	0.027	0.044	-0.056	0.115
3	DMS	OE-AAS	I-AAS	.259	0.044	0.321	0.065	0.203	0.456*
Auxiliary	SATAQ-I	DMS→OE-AAS	I-AAS	.118	0.027	0.163	0.043	0.093	0.262*
Partial mediation model ^a									
1a	SATAQ-I	OBCS-Surv	OBCS-Shame	.077	0.036	0.083	0.039	0.006	0.161*
2	SATAQ-I	DMS	OE-AAS	.179	0.037	0.318	0.072	0.176	0.460*
3	DMS	OE-AAS	I-AAS	.187	0.042	0.127	0.049	0.118	0.345*
Auxiliary	SATAQ-I	DMS	I-AAS	.067	0.025	0.092	0.034	0.024	0.159*
Auxiliary	SATAQ-I	OE-AAS	I-AAS	.092	0.034	0.127	0.049	0.031	0.223*
Auxiliary	SATAQ-I	DMS→OE-AAS	I-AAS	.094	0.023	0.129	0.036	0.058	0.201*

Note. SATAQ-I = Internalization subscale of the Sociocultural Attitudes Toward Appearance Questionnaire; OBCS-Surv = Body Surveillance subscale of the Objectified Body Consciousness Scale; OBCS-Shame = Body Shame subscale of the Objectified Body Consciousness Scale; DMS = Drive for Muscularity Scale; OE-AAS = outcome expectation for anabolic-androgenic steroids [AAS]; I-AAS = intention to use AAS.

^a Due to deletion of two paths, not all originally hypothesized indirect paths were present in the partial mediation model.

* $p < .05$.

paths from internalization to outcome expectation for AAS use and from drive for muscularity to intention to use AAS. For the sake of parsimony, we also eliminated the two nonsignificant paths from body shame and body surveillance to drive for muscularity. The resultant model fit the data well, $\chi^2(7, N = 270) = 6.24, p = .51, CFI = 1.0, SRMR = .027, RMSEA = .000, 90\% CI [.000, .070]$. This model accounted for 24% of the variance in body surveillance scores, 16% of the variance in body shame scores, 25% of the variance in drive for muscularity scores, 22% of the variance in outcome expectation for AAS use scores, and 36% of the variance in intention to use AAS scores. As indicated in Figure 2, the newly added direct paths—from internalization to outcome expectation for AAS use and from drive for muscularity to intention to use AAS—were significant. These direct paths yielded two new indirect relations of internalization with intention to use AAS through (a) drive for muscularity and (b) outcome expectation for AAS use. Auxiliary tests indicated that both of these indirect relations were significant, and the significant indirect relations found in the original model also remained significant (see Table 2). These results suggested that drive for muscularity was a partial mediator of the links of internalization with outcome expectation for AAS use and intention to use AAS and that outcome expectation for AAS use was a partial mediator of the relations of internalization and drive for muscularity with intention to use AAS.

Discussion

Findings of the present study offer support for some tenets of objectification theory as applied to men and point to internalization of cultural standards of attractiveness and drive for muscularity as important correlates of men's propensity to use AAS. Direct and indirect relations among internalization, body surveillance, and body shame were consistent with objectification theory. Furthermore, direct and indirect relations among drive for muscularity and AAS variables were consistent with hypotheses grounded in AAS and substance use literature. But results raised questions about the roles of body surveillance and body shame in men's drive for muscularity and propensity to use AAS. Rather, internalization of cultural standards of attractiveness appeared to be the nexus of overlap between the objectification theory variables and men's drive for muscularity and propensity to use AAS. These findings

can advance research and practice concerning men's body image and AAS use in a number of ways.

First, consistent with objectification theory and findings of prior research with women, in this sample of mostly heterosexual college men, internalization, body surveillance, and body shame were related directly and positively with one another; internalization had an additional positive indirect link with body shame through body surveillance. Thus, continued attention to the relations among internalization, body surveillance, and body shame is warranted in research on men's body image concerns. Also, efforts to reduce internalization and body surveillance may be important in prevention and intervention efforts to reduce men's body shame.

Second, relations among drive for muscularity, outcome expectation for AAS use, and intention to use AAS were consistent with those in prior literature on propensity to use AAS and other substances (e.g., Grogan et al., 2006; Leventhal & Schmitz, 2006). In particular, positive outcome expectation for AAS use partially mediated the link of drive for muscularity with intention to use AAS. These findings support further attention to drive for muscularity as a correlate of AAS use and suggest that outcome expectation for AAS use may link drive for muscularity with intention to use AAS. Thus, prevention efforts aiming to reduce men's intention to use AAS may benefit from attending to internalization of cultural standards of attractiveness, drive for muscularity, and positive outcome expectation for AAS use.

Finally, the overlap between the objectification theory framework and the AAS variables involved the relations among internalization, drive for muscularity, and outcome expectation for AAS use. That is, drive for muscularity partially mediated the links of internalization with outcome expectation for AAS use and intention to use AAS. In addition, outcome expectation for AAS use partially mediated the link of internalization with intention to use AAS. By contrast, body surveillance and body shame did not yield significant unique direct or mediated relations with drive for muscularity or the AAS variables. Taken together, this pattern of results suggests that internalization may be more important to men's drive for muscularity than are body shame and body surveillance and that drive for muscularity may link internalization with propensity to use AAS. Thus, men's internalization of cultural standards of attractiveness may be associated with drive for

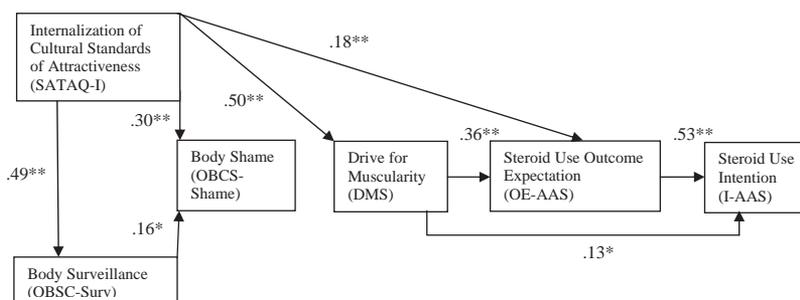


Figure 2. Partial mediation mode. Values represent the standardized path coefficients. SATAQ-I = Internalization subscale of the Sociocultural Attitudes Toward Appearance Questionnaire; OBSC-Surv = Body Surveillance subscale of the Objectified Body Consciousness Scale; OBSC-Shame = Body Shame subscale of the Objectified Body Consciousness Scale; DMS = Drive for Muscularity Scale; OE-AAS = outcome expectation for anabolic-androgenic steroids [AAS]; I-AAS = intention to use AAS. * $p < .05$. ** $p < .01$.

muscularity and propensity to use AAS in the apparent absence of body shame or body surveillance as mediators. As such, targeting prevention and intervention efforts toward reducing internalization might be fruitful, given its direct and indirect links with each of the body image and AAS criterion variables examined in this study.

Our findings challenge the posited mediating role of body shame in the objectification theory model as applied to men's drive for muscularity. Lack of support for the posited relations of body surveillance and body shame with drive for muscularity in the present study, along with prior findings (Daniel & Bridges, 2010; Martins et al., 2007), suggests that body surveillance and body shame may not be as salient to men's drive for muscularity as they are to thinness-focused body image concerns. This pattern fits with qualitative and quantitative evidence that men may feel compelled to achieve a more muscular physique although they are still satisfied with their bodies (e.g., Galli & Reel, 2009; M. A. Peters & Phelps, 2001; Schwerin et al., 1996). Such disconnect between drive for muscularity and body shame may be because traditional gender norms align physical attractiveness and self-worth more closely for women than for men (e.g., Wade & Cooper, 1999). In fact, appearance focus and thinness have been identified as gender role norms for women (Mahalik et al., 2005) but not for men (Mahalik et al., 2003). Thus, men who want to become more muscular may not necessarily feel ashamed of their bodies. This possibility also underscores the danger that clinicians who focus narrowly on thinness-related body concerns and shame could miss muscularity-related body image problems in men.

It is also important to note that the nonsignificant unique relations of body surveillance and body shame with men's drive for muscularity and propensity for AAS use should not be interpreted as the unimportance of body surveillance and body shame in men's body image. In fact, objectification theory variables have been linked with thinness-related body image concerns for men and for women (e.g., Martins et al., 2007; Smolak & Murnen, 2008; Wiseman & Moradi, 2010), and it is possible that the roles of body surveillance and body shame differ depending upon the body image criterion variable (i.e., thinness-focused or muscularity-focused concerns) rather than upon gender group (i.e., women or men). Research is needed to test this possibility by comparing the magnitude of the associations of objectification theory variables with muscularity-focused and thinness-focused body image concerns and by evaluating whether these links are similar or different across women and men. Continued attention is also needed to the roles of body surveillance and body shame in men's drive for thinness and associated eating problems.

Implications for Practice

Results of the present study can inform clinical practice with men presenting with body image or AAS use problems. First, support for the direct and indirect positive relations of internalization with all other variables in this study suggests the importance of attending to men's internalization of cultural standards of attractiveness. Thus, understanding and reducing such internalization may be useful in counseling. To this end, it might be helpful to explore the content and impact of clients' internalized standards of attractiveness as well as the factors that promote these standards. For example, where does the client experience messages about cultural standards of attractiveness most frequently or

acutely (e.g., fitness magazines, the gym)? What benefits (if any) does he gain from these sources (e.g., information about physical health, socializing with friends)? How might he gain those benefits while resisting internalization of the attractiveness standards (e.g., recognizing that magazine images are modified photos of men, replacing socializing at the gym with playing a team sport)? In exploring these questions, attention to internalization of muscularity messages may be important, given this study's finding that drive for muscularity mediated the link of internalization with propensity to use AAS.

Second, the present results suggest that when one is working with clients with a propensity to use AAS, attending to internalization of cultural standards of attractiveness, drive for muscularity, and outcome expectation for AAS use may be important. Thus, the aforementioned suggestions regarding internalization of cultural standards of attractiveness and muscularity standards in particular are applicable. In addition, awareness of the risks of AAS use may serve as a barrier to beginning use (Maycock & Howatt, 2005). To this end, clinicians should ensure that they have working knowledge of the properties and use of AAS, because AAS users tend to be highly knowledgeable about AAS, may have conducted independent research on AAS prior to beginning use, and may be skeptical or derisive of health professionals who do not possess an equivalent level of knowledge (Grogan et al., 2006; Wright et al., 2001). Helpful resources for learning about AAS include Clark and Henderson's (2003) summary of the chemical properties and effects of AAS, Gonzales et al.'s (2001) summary of considerations for working with clients who use AAS, and Kanayama et al.'s (2008) summary of long-term consequences of AAS use.

Finally, observed increases in men's muscularity-focused body image concerns in college counseling centers (e.g., Morgan, 2002; Olivardia et al., 2000) suggest that in addition to working with individual clients, mental health professionals and educators may seek to increase campus and community awareness regarding men's AAS use and body image concerns. The present results, which point to the importance of internalization of cultural standards of attractiveness and drive for muscularity, can inform such efforts. For example, campus announcements and outreach programs can disseminate information that challenges cultural standards for men's muscularity and increases the visibility of college counseling centers and other resources for help with men's body image issues. Mental health professionals can also collaborate with fitness center staff to exchange expertise about men's body image and AAS use problems. For instance, counselors could educate fitness trainers about warning signs for body image problems, and fitness trainers could help counselors frame their services in such a way to attract fitness center clientele. Such collaborations may facilitate the integration of counseling services as a resource to fitness center clients who experience body image or AAS use problems.

Limitations and Future Directions

Despite the contributions of this study, its limitations should be considered in interpreting the present results. First, the sample's characteristics outline the boundaries of generalizability for the findings. The sample comprised predominantly heterosexual and middle- to upper-class undergraduate men, more than half of whom identified as White. Although the study offers needed data

on this population, future research is needed to examine the hypotheses with men of different backgrounds in terms of age, race, ethnicity, class, and other identity dimensions. Sexual minority men have been identified as a particularly important subpopulation to study in objectification theory research (Moradi & Huang, 2008), and the present study offers groundwork for extending objectification theory to studying sexual minority men's drive for muscularity and propensity to use AAS. The content and salience of body ideals may differ across cultures (e.g., Yang et al., 2005). Nevertheless, dominant sociocultural standards determine, at least to some extent, the standards to which all members of that society are held (e.g., Mahalik et al., 2003; Root, 1990). Objectification theory research, including the present study, has examined body image issues largely from a lens of dominant cultural standards. Between- and within-group variability in body ideals for men across cultures are also important to consider.

Another consideration is that direction of causality cannot be inferred from the present cross-sectional correlational findings. Longitudinal or experimental studies on objectification theory, drive for muscularity, and propensity for AAS use are limited with men, and the present data can lay the groundwork for such studies. For instance, within the objectification theory literature, objectification-heightening experimental manipulations have heightened body shame in women but not in men (e.g., Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998; Martins et al., 2007). One interpretation of such null findings with men is that men are unaffected by objectifying situations. The present findings, however, offer some alternative considerations in research with men. Perhaps drive for muscularity and propensity to use AAS are important outcomes to assess in addition to or instead of body shame. Perhaps situational manipulations should implicate muscularity more explicitly (e.g., by having weight-lifting equipment in the room). Similarly, the present study offers groundwork for longitudinal research to elucidate potential developmental processes in the hypothesized relations, for instance, the extent to which changes in internalization of cultural standards of attractiveness and drive for muscularity culminate in positive outcome expectation for AAS use, intention to use AAS, and actual AAS use. Thus, the patterns of relations observed in the present study cannot be interpreted as causal or directional, but they offer avenues for elucidating causal relations in future research with men.

Finally, measurement limitations bear consideration in this study and in broader literature on men's body image. Some measures used in this study were developed for use with women but have since been used with men, yielding acceptable psychometric properties and conceptually meaningful results (e.g., Hallsworth et al., 2005; Morry & Staska, 2001). But somewhat lower Cronbach's alphas have been found for OBCS-Shame items with heterosexual or presumably heterosexual men (.70 in Martins et al., 2007; .69 in Hallsworth et al., 2005) than with women or gay men (values in the .80s; e.g., Kozee & Tylka, 2006; Martins et al., 2007; Moradi, Dirks, & Matteson, 2005; Wiseman & Moradi, 2010). Some respondents may interpret OBCS-Shame items as thinness specific rather than consider their alternative meaning as having to do with "bulking up" (e.g., "I would be ashamed for people to know what I really weigh"). It may be useful to explore the interpretations and perceived self-relevance of these items across groups or to

make explicit that weight and size shame could be about feeling too big or too small. As well, responses to the OE-AAS and I-AAS items were on the lower end of the possible distribution and may represent floor effects for these measures; future work with the OE-AAS and I-AAS with more at-risk populations (e.g., bodybuilders or college athletes) may yield different results.

Despite these limitations, the present findings extend some tenets of objectification theory to predominantly heterosexual college men and contribute to understanding drive for muscularity and propensity to use AAS within this population. We hope that these findings offer useful groundwork for future research that evaluates their generalizability across diverse samples of men and evaluates the causal directions of relations posited in objectification theory.

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